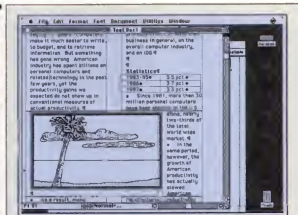


INFO WORLD

THE
PC
NEWS
WEEKLY

Pascal
Compilers



Microsoft Word 4 for the Mac adds a table-making feature and a Page View that lets you edit text while working in columns.

Microsoft Adds Features To Word 4 for the Mac

By Michael J. Miller

With Word 4.0 for the Macintosh, Microsoft has chosen to defend its top-selling Mac word processor by adding a number of new features and by making the program easily customizable—so it works the way you want it to.

Perhaps the most important new function is table creation. This makes it easy to set up a table in your document by choosing the number of columns and rows. You can put text, numbers, or even graphics within a table and easily set a border. It's quite nice, and I expect other word processing vendors will follow suit.

Another new feature lets you decide exactly where a paragraph or a graphic appears on a page. You can assign a graphic to a particular part of your text: left- or right-justified or centered within a column, margin, or the whole page; or to

See Word 4, Page 89

Odesta Document Manager To Link Macs With VAXes, PCs

By Nick Arnott

SANTA CLARA, CA — Odesta Corp. plans to announce this week a first-of-its-kind document management system that links Macintoshes with DEC VAX minicomputers, as well as IBM PCs and compatible microcomputers in DEC emulation modes, sources close to the company said.

Apple and DEC are expected to endorse the new Odesta Document Management Sys-

tem, the sources said. Officials from Odesta, Apple, and DEC declined to comment.

Several major printing and design firms are also expected to announce that they will resell the system tailored for publishing and other vertical applications, the sources said.

The document management system is being tested by users and is expected to ship by the

See Odesta, Page 6

Prices of New PS/2s Could Lure Back Clone Buyers to IBM, Managers Say

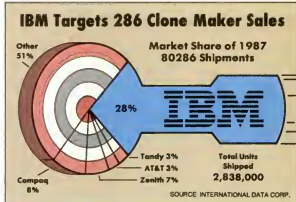
By Alice LaPlante and Stuart J. Johnston

IBM's introduction of two new low-end PS/2s tomorrow won't help win converts to its Micro Channel Architecture (MCA), but it may entice back some corporate accounts that have strayed from the IBM fold when the PS/2 family was introduced, PC managers say.

If nothing else, IBM's announcement of a highly price-competitive 286 machine with an "AT" bus — the low-end version of which will retail for \$1,995 — will shake up the 286 market, analysts said. Currently, no single vendor controls the AT marketplace, according to International Data Corp.

Although Compaq's plan to introduce a new 32-bit architecture standard the same day may cause the corporate accounts waiting for "a good reason" to switch to the MCA to decide again if, current MCA users are unlikely to be affected.

PC professionals interviewed by InfoWorld said they don't



With this week's introduction of its new low-priced 286-based Model 30s, IBM hopes to regain market share lost to "other" clone makers.

interpret IBM's announcement of more non-MCA PS/2s as an admission of failure for its MCA strategy.

"Price/performance is of much higher interest to us than bus structure," said Lee Nolan,

a systems manager at The Travelers, in Hartford, Connecticut, which has standardized on IBM's PS/2 line.

"We bought into the MCA concept not for any technical

See 286, Page 89

Extended AT Bus Poses Threat to IBM

By Ed Scannell

NEW YORK — If the impressive list of vendors backing the Extended Industry Standard Architecture (EISA) can deliver what their proposed specification promises, it would represent a serious threat to IBM's long-range microcomputing strategy, according to industry observers.

Led by Compaq Computer Corp., over 40 companies here next week will throw their considerable weight behind EISA, a

32-bit bus fully compatible with IBM's Personal Computer AT bus and which will work with 8- and 16-bit XT and AT boards. The proposed specification offers not only AT compatibility but reportedly has performance values comparable to IBM's Micro Channel Architecture.

While the EISA's specifications won't be final for a while, sources within the companies supporting it say that, like the MCA, it will support multiple

processors and burst-mode direct memory access as fast as 33 megabytes per second. The 33-megabyte-per-second transfer rate is called Class C and is used for graphics-intensive applications. Most applications will use Class A transfers at 4 megabytes per second or Class B transfers at 8 megabytes per second.

EISA will also automatically configure systems and expansion boards, thereby doing away

See AT Bus, Page 89

AT DEADLINE

Microsoft to Unveil CD ROM Title

Microsoft will announce this week Programmer's Library, a CD ROM product aimed at increasing programmers' productivity by providing on-line access to 48 technical manuals and books as well as sample programs.

References contained in Programmer's Library — which will be introduced next week at the Seybold Desktop Publishing Conference, in Santa Clara, California — are organized into nine categories: OS/2, Windows, MS-DOS, C,

Basic, MASM, Pascal, Fortran, and hardware.

Each category contains all of the technical manuals for Microsoft's version of the OS or language in question, according to a Microsoft press release obtained by InfoWorld.

Programmer's Library will cost \$395 with a free update in early 1989 for Presentation Manager and LAN Manager.

— Stuart J. Johnston
Continued on Page 3

Introducing Turbo Debugger, Turbo Assembler, Turbo Pascal 5, Turbo C 2: The Revolution Continues!

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BIGDEMO BENCHMARK	TURBO ASSEMBLER	Microsoft® Assembler
Assembly time (seconds)	9.34	27.46
Link time (seconds)	4.15	10.51
FEATURE COMPARISON		
MASM compatible (4.0, 5.0, 5.1)	Yes	No
Thorough type checking	Yes	No
Nested structures and unions	Yes	No
Multimode cross reference	Yes	No
Assemble multiple files	Yes	No

Run on IBM PS/2 model 60 using Turbo Assembler version 1.0, Turbo Linker version 2.0, Microsoft Macro Assembler version 5.10, Microsoft Overlay Linker version 3.64.

- Faster than other assemblers
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The Turbo Debugger is truly revolutionary. It's the professional productivity booster that you've been waiting for. Check out the features:

FEATURE COMPARISON	TURBO DEBUGGER	CodeView®
Multiple overlapping views	Yes	No
386 virtual-86 mode debugging	Yes	No
Remote debugging	Yes	No
Data debugging	Yes	Partial
Generalized breakpoints	Yes	No
Session logging	Yes	No
Conventional memory used—80386	Zero K	230K
Conventional memory used—remote	15K	N/A

Turbo Debugger version 1.0, Microsoft CodeView version 2.2.

DATA DEBUGGER

- Follow pointers through linked lists
- Browse through arrays and data structures
- Change data values

BREAKPOINTS

- Actions: stop, run code, log expression
- Break on condition, memory changed
- Software ICE capabilities
- 386 debug register support
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FEATURE COMPARISON	TURBO PASCAL 5.0	Turbo Pascal 4.0
Integrated debugger	Yes	No
Overlays, including EMS support	Yes	No
8087 floating-point emulation	Yes	No
Turbo Debugger support	Yes	No
Procedural types, variables, parameters	Yes	No
Smart linking of code and data	Yes	No
Constant expressions	Yes	No
EMS support for editor	Yes	No

Benchmark (25 iterations) run on an IBM PS/2 Model 60.

NEW TURBO PASCAL 5.0

- Compile, edit and debug in the integrated Turbo Pascal environment
- Integrated source-level debugger lets you step code, watch variables, and set breakpoints
- Overlays, including EMS support
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- Support for Borland's Turbo Assembler and Turbo Debugger
- Procedural types, variables and parameters
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- Constant expressions
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FEATURE COMPARISON	TURBO C 2.0	Microsoft® C 5.1
Integrated debugger	Yes	No*
Inline assembly	Yes	No
Auto dependency checking	Yes	No
EMS support for edit buffer	Yes	No
Device-independent graphics	Yes	No
Number of memory models	6	5
Price	\$149.95	\$450.00

Heapsort compiled with full optimization. Benchmark run on an IBM PS/2 Model 60. *Integrated debugger included with Quick C.

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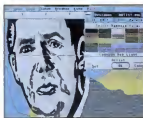
BORLAND



Micrograf's Designer, Version 1.3 supports high-resolution graphics 19



Michael Dell (right) is depending on pros such as Lee Walker to help run his company 40



The Designer PC line-drawing package offers more versatility than similar Mac programs 70

AT DEADLINE *Continued From Page 1*

Chip Set for 80286-Based Laptops to Debut

To provide better power management and high-quality graphics for laptops, Chips and Technologies Inc. next week will announce a chip set specifically designed for the AT-compatible portables. "This is a complete product family and represents a totally new product line, not a general-purpose chip set that we are trying to orient to laptops," said Keith R. Lobo, vice president and COO of the San Jose, California-based company. The chip set will include an LCD controller that will be 100 percent compatible at the hardware level with VGA, he said.

— Tom Moran

PC-MOS Upgrade Available Immediately

The Software Link Inc. announced that an upgrade of its PC-MOS operating system is compatible with the new Compaq 386/25, 386/20, and Portable 386 computers, as well as with the IBM PS/2 Model 70-121.

The Norcross, Georgia, company said Version 2.20, available immediately, is compatible with several of the latest software and hardware enhancements available on 80386-based computers. The update also provides communications with Novell's Netware Interface for PC-MOS, the company said. PC-MOS, which runs on 80386 and 80286 IBM PC-compatible compatibles and IBM PS/2s, is available in single-user (\$195), five-user (\$595), and 25-user (\$995) versions. Updates for current owners are \$25 for single users and \$50 for five and 25 users.

— Robert Snowden Jones

Enable Update Supports OS/2, DOS, Unix

A multitasking update of the integrated package Enable, supporting OS/2, DOS, and Unix, will ship this month from The Software Group of Ballston Lake, New York. Over 150 new features are provided, including hypertext on-line documentation, support for EMS 4.0 and data paging to disk, and multitasking. The update, which replaces Enable 2.15, supports applications in up to eight windows, the firm said. OS/2 and DOS support are included in the \$695 package. Updates are free to users who acquired the product after August 8 and \$95 for others.

— Peggy Watt

SPA Files Charges Against Software Pirates

A consortium of Software Publishers' Association (SPA) members last week obtained preliminary injunctions against two Los Angeles dealers and is still seeking action against four other California firms charged with copyright violations for software piracy. The charges involve dealers who fill and sell hard disks with programs from Ashton-Tate, Word Perfect, Lotus, and Microsoft, as well as copies of PC-DOS from IBM, said Ken Wasch, SPA executive director. Wasch said later injunction hearings will take place by mid-October and that Claris will be a plaintiff in at least one of those complaints.

— Peggy Watt

Look and Feel Finally Makes It to Court

The first of the look and feel suits to go to trial got started last week, although the controversial issue of how far copyright protection extends won't be heard for some time. Software Arts and Lotus Development met in federal court in Boston to present arguments on whether Software Arts has the right to sue Lotus for copyright infringement and trade secret misappropriation — given that the publisher of Visicalc sold much of its assets to Lotus in 1985.

The trial was scheduled to run at least through Friday, and the judge did not plan to issue a ruling immediately. Software Arts sued Lotus and Mitch Kapor for \$100 million last year, shortly after Lotus sued Paperback Software and Mosaic Inc. No trial date has been set for hearing the copyright infringement aspect of the suit.

— Rachel Parker

NEWS

Adobe will demonstrate its PC version of Illustrator at the Seybold Conference this week 5

The 68030-based Macintosh will set the platform for Apple's higher performance operating system expected next year 5

Macintosh System 6.0.1 includes more than 60 bug fixes and a new set of system files 5

Ashton-Tate is expected to announce its first true compiler for Phase 5

Apple is distributing a free guide to Mac connectivity 6

Hayes and Microcom have finally resolved their 2-year-old legal battle 6

A bevy of product announcements is expected at this week's Seybold Conference 8

Lotus announces a free upgrade to its yet-to-be-released 1-2-3, Release 3.0 8

IBM has licensed Apollo's Network Computing System 8

Tops will announce Netbios compatibility for its network operating system 8

NETWORKING

3Com Corp. has released details of its 3+ upgrade for OS/2, along with a number of product price increases 11

SOFTWARE

The Classfile file management program from Soflogic Solutions will let users more easily manage hard disk files 19

HARDWARE

Industry experts are predicting that high-capacity floppy disk drives will be commercially available in a few years 27

MACINTOSH NEWS

Interpreter has added Mac support to its document conversion system 34

UNIX NEWS

UI-Link from Vortex Technology turns any DOS-based system into a UIUCP network node 36

INDUSTRY

Dell Computer's growth into a leading computer vendor has not been painless 40

PRODUCT COMPARISON

Pascal has evolved into a serious language suitable for real-world applications. This product comparison examines four leading Pascal compilers for PCs 49

REVIEWS

SOFTWARE

The powerful Norton Commander, Version 2.0 may be the nearly ideal DOS shell 63

Alphaworks is a low-end integrated package that uses Lotus and Dbase file structures 66

Designer is a supersophisticated PC line-drawing package 69

Review Responses 72

COLUMNS

Tech Street: John Gantz 41

Tech Talk: Steve Gibson 41

To the Editor 44

The Technology Show: George Morrow 47

First Look/Professional Extension: Michael J. Miller 61

On the Horizon: William F. Zachmann 74

Notes From the Field: Robert X. Cringely 90

INFOMARKET 75

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The PC version of Adobe Illustrator runs under Microsoft Windows and requires 640K of RAM and at least 256K of EMS 4.0 to run.

Adobe to Show Its PC Version of Illustrator

By Bob Flinn

SANTA CLARA, CA — Adobe Systems will demonstrate the long-awaited PC version of Illustrator this week at the Seybold Desktop Publishing Conference here, but users who have been waiting for a PC duplicate of the Macintosh program may be disappointed.

Adobe Illustrator, Windows Version still needs work and won't be available until the end of 1988, said John Warnock, Adobe's president. Porting Illustrator from the Macintosh to Microsoft Windows was more difficult than anticipated, largely because of the 640K memory limit imposed on the program by DOS, he said.

Memory constraints mean PC Illustrator won't have all the functionality of Illustrator '88 on the Mac, Warnock said. The shape blending tool and fill patterns are among the features missing from the PC version. Even so, it is the first industrial-strength drawing program available on the PC, he said.

"This really changes the whole name of the game in terms of price/performance," Warnock said.

The PC version supports the basic Postscript four-color printing model but cannot display colors on-screen, Warnock said. Colors will print correctly on color Postscript printers and produce four-color separations on Postscript typesetters. But PC Illustrator doesn't support spot color separations, he said.

PC Illustrator also uses its own graphics engine for screen and printer handling. Users will need a Postscript printer to get the full value from PC Illustrator. The program prints at all non-Postscript bit map printers at 72 dpi, which means it doesn't support high-resolution output on the Hewlett-Packard Laserjet, the most common laser printer in the PC market.

The Windows-based user interface of PC Illustrator is almost identical to the Mac prod-

uct, and many functions can be invoked with keyboard shortcuts similar to those on the Mac version.

With PC Illustrator, users can also draw freehand, trace over scanned images manually or automatically, and use a tool to draw basic shapes such as rectangles, circles, and ellipses. Users can also dynamically modify curves at any time by manipulating the bezier control points. Objects can be scaled, rotated, and reflected — either with a pointing device or specified numerically — and grouped together and duplicated.

PC Illustrator can zoom in 16 levels for detail work. All coordinates are maintained as double-precision floating-point numbers, allowing intricate precise designs, Warnock said.

The Illustrator package will cost \$695 and include a training video, a Windows 2.0X run-time version, and a DXF conversion utility for CAD files.

PC Illustrator will run on 80286-based PCs with 640K of RAM and at least 256K of EMS 4.0, although Adobe recommends 1 or 2 megabytes. The program requires a Hercules, EGA, or VGA graphics card; a Windows pointing device; and a 20-megabyte hard disk. It does not support a math coprocessor.

68030 Mac to Set Platform for OS

Not Expected to Offer Big Speed Improvement

By Laurie Flynn

CUPERTINO, CA — Apple Computer's first 68030-based Macintosh won't offer a substantial speed improvement over the existing Macintosh II, but it will set the platform for Apple's higher performance operating system expected next year, according to users and analysts who were briefed by the company.

The new system, to be introduced September 19, will include a new floppy disk format that can read MS-DOS disks, the sources said.

As reported earlier, Apple's new machine, a Mac II with a 16-MHz 68030, also sports new ROMs providing faster disk access and the long-awaited Superdrive, a built-in 1.44-megabyte drive capable of reading MS-DOS disks and reading and writing Macintosh disks, according to sources briefed by Apple. (See "Apple Planning to Announce 68030 Version of Mac II," September 5.) The unit also includes a math coprocessor.

According to one corporate user briefed by Apple, the 68030

processor used in the new Mac provides only a 10 to 15 percent speed improvement over the 68020-based Mac II. However, the new Mac will help Apple prepare users for the arrival of non-preemptive multitasking, expected in an upcoming version of the Mac operating system, he said.

The Superdrive is expected to raise the Macintosh standard for floppy disk capacity, while at the same time providing a way for users to share data between high-density DOS applications and Macintosh applications. The Superdrive will be built into future models of the Macintosh, said the sources, but Apple's plans to offer an upgrade path for current Macintoshes is still unclear, since the drive requires new ROMs.

The high-density drive will certainly be a boon to developers and most users, although some PC managers anticipate headaches incorporating a new floppy disk format. According to one corporate manager of end-user computing, however, the availability of yet another

floppy disk format for the Mac will complicate his department's efforts to support the company's machines. And for a lot of users, the drive's DOS connectivity won't have any immediate application.

At GTE of Billerica, Massachusetts, for example, engineers using IBM PC compatibles with high-density disks seldom have a need to transfer data to the Mac, according to network coordinator Whit Porter, and the Daynfile drive is already used to transfer DOS data to the Mac.

A device under development by The Engineering Department of Campbell, California, will also allow Mac users to connect IBM PC-type drives and read DOS files, and it can increase the capacity of a disk by as much as 50 percent. That product, expected on the market in January of next year, will support the Mac Plus, Mac SE, and Mac II, according to the company. That product, called Lumpy in development, conceivably could provide an upgrade path to the Superdrive for the installed base of Macs.

Mac System 6.0.1 Fixes Over 60 Bugs

By Nick Arnett

Macintosh System 6.0.1, now in the hands of some developers, includes more than 60 bug fixes and a new set of system files to two disks, according to Apple developers.

Apple spokeswoman Cynthia Macon confirmed that the revised system is in beta test but would not comment further or discuss its release date.

In June, two weeks after shipping System 6.0, the company announced the revision and said the corrections would be limited to the system's main file.

The software fixes bugs that caused crashes or system hangs in the following situations: "force launching" documents from the Finder, drawing pic-

tures under low memory conditions on a Mac II, and when opening and interrupting a document belonging to an application in the background, according to developers.

Other, less fatal problems include incorrect spacing for bold Postscript fonts, a conflict between Hypercard and the Sound Manager, third-party disk drivers that crash or return garbage, and problems in the Sound Manager, Quick Draw, QuickDraw, Color QuickDraw, Script Manager, Dialog Manager, and Font Manager.

Apple advised developers it will not fix nine bugs. These bugs cause the following: a server to crash when the maxi-

mum number of files are open and a workstation attempts to launch a resident application; error messages to appear as system error messages under Multifinder; loss of Finder comments when unmounting a volume with an application other than Finder; and shadow and outline text in large point sizes on the Laserwriter IISC and Imagewriter LQ will not print some characters. Apple recommends using plain text instead.

Apple removed from the system the 14-point version of the Venice typeface due to "space limitations."

System 6.0.1 also makes the previous system better available again.

Ashton-Tate to Announce True Compiler for Dbase

By Scott Mace

TORRANCE, CA — Ashton-Tate is expected to announce this week plans to develop its first true compiler for Dbase that would enable applications to run faster and in less memory, said sources close to the company.

The announcement is expected at a developer's conference in Los Angeles, sources said.

Dbase IV, announced in Feb-

ruary, includes a compiler-interpretor. The compiler, Ashton-Tate's first, will allow Dbase programs to run up to 10 times faster than uncompiled code, the company said. The compiler-interpretor is built in and automatically processes Dbase IV commands, procedures, and format files into intermediate object code, saving the code in program object (.dbo) files.

But because the compiler-interpretor generates pseudo code and requires the run-time module, it is not considered a true compiler, sources said. The new compiler will be the first to generate true .EXE-type files that can be run without requiring either Dbase or the Dbase run-time module, sources said.

The new compiler may also free up additional memory for

applications that would be taken up by the run-time module. Resulting .EXE code will also run faster than pseudo code.

Ashton-Tate vice president of marketing, Lydia Dobyns would not confirm or deny the existence of the compiler, but she said Ashton-Tate has been studying the financial impact of users' demands for royalty-free Dbase applications.

Free Apple Program Provides Mac Connectivity Guidance

By Scott Mace

WASHINGTON — Apple Computer last week announced it would distribute 150,000 free copies of an MS-DOS program offering users guidance for IBM PC-to-Macintosh connectivity.

The diskette is called "The Compatibility Guide, An MS-DOS Point of View about Macintosh." The program quizzes users about the kind of Macs and PCs they have and asks them how often they need to transfer data between the two. It also addresses other factors such as the kind of networks available and the nature

of the DOS applications they use.

The program recommends several options for PC-to-Mac connectivity, such as Novell's Netware or PC compatibility programs for the Mac such as Soft PC.

Apple will send out disks to different groups of MS-DOS users, said Craig Elliot, marketing manager of MS-DOS and OS/2 connectivity at Apple. Elliot kicked off the giveaway at a Capital Microcomputer Users Forum panel on PC-to-Mac connectivity, and said anyone was free to make copies of the

program for further distribution. Apple dealers will be sent copies of the disks on September 15, he added.

"With one disk, you probably will put 10,000 consultants out of work," joked Andrew M. Seybold, publisher of the *Outlook on Professional Computing* newsletter, based in Santa Clara, California, who chaired the session.

Also included on the disk are data screens on the various Apple and third-party connectivity solutions, as well as information about Apple's current Macintosh family, which can be printed out.

The disk uses color and animation to illustrate much of the information contained; it even contains a puzzle game.

The Compatibility Guide will be updated periodically, and a version on 3½-inch MS-DOS disks will be available shortly, Elliot said.

Odesta

Continued From Page 1

end of the year, according to the sources.

The system is based in part on Odesta's Helix VMX product, which links the company's Double Helix database with VAX computers. It creates "document servers" on Macs or VAXes that will store, retrieve, and track documents such as text, graphics, spreadsheets, and other files, according to the sources.

Document server software accommodating up to 10 users will cost \$795, a source familiar with the product said. VAX implementations will range from \$4,000 to as much as \$20,000, the sources said.

The software allows managers to keep track of all of the elements of a document, such as artwork, headlines, and graphics and text. It also restricts users' access to documents, the sources said.

On VAX minicomputers, the system takes advantage of a new multilevel document architecture called Document Compound Architecture, named for its capability to handle combined text and graphics, the sources said. The Document Compound Architecture will make it easier to manage batch processing of documents.

Hayes, Microcom To Cross-License Their Technologies

By Robert Snowdon Jones

Two archrivals of the modem industry said last week that they have resolved their 2-year-old legal fight by agreeing to cross-license each other's technology.

Hayes Microcomputer Products Inc. of Norcross, Georgia, and Microcom Inc. of Norwood, Massachusetts, said they have settled out of court a legal dispute over a Hayes modem patent.

Hayes said that under the settlement agreement, Microcom paid Hayes for the license to the "Modem with Improved Escape Sequence" patent that was issued to Hayes in 1985. The patent covers Hayes' method of using special characters to switch off-line during a telecommunications session in order to send commands directly to the modem.

In turn, the parties have agreed to a five-year cross-license agreement that includes Hayes' use of technical information about the Microcom Networking Protocol (MNP).

Hayes filed actions against Microcom and other modem companies charging that they had conspired to violate U.S. antitrust laws. In its countersuit, Microcom alleged that Hayes was trying to monopolize the modem market by requiring royalties for the escape sequence.

Out of the courtroom, Hayes has battled with Microcom before the International Telegraph and Telephone Consultative Committee (CCITT) against the use of MNP as part of the V.42 error-correcting protocol standard. But the committee has recommended a standard that includes both companies' recommendations. Hayes and Microcom have now said they are considering using each other's technology in future modems that use V.42.

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PC Adobe Illustrator, Ventura Upgrade to Highlight Seybold

By Nick Arnett and Bob Ponting

SANTA CLARA, CA — The highlights of this week's Seybold Desktop Publishing Conference will be a PC version of Adobe Illustrator, a document management system from Adobe Corp., and a major upgrade of Xerox Corp.'s Ventura Publisher.

In addition, a bevy of new product announcements for both the Macintosh and the PC is expected. (See "Image Processors to Highlight Seybold," September 5.)

Crickit Software Inc. of Malvern, Pennsylvania, will announce Crickit Presents, Version 2.0 for the Mac. New features include color blends, a thesaurus, a spelling checker, auto-inking and import of text from graphics and tables. The price remains \$495, and upgrades are free, Crickit said.

Crickit also plans to announce several hardware companies' endorsements of Crickit Expression, a Mac device driver.

Digital Composition Systems of Phoenix plans to introduce DB Publisher, a typographically sophisticated database publishing system for IBM PCs and compatibles.

DB Publisher can import data directly from popular databases, spreadsheets, word processors, and other applications, the company said. The suggested retail price is \$695, or \$895 for a network version.

Adobe Systems Inc. of Mountain View, California, will add 13 new typefaces to the Adobe Type Library. The new faces are ITC Kabel, OCR A&B, MICR, Helvetica 1, Helvetica 2, Helvetica 3, Times 10, Kaufmann, Clarendon, Peignot, New Caledonia, ITC Clearface, Americana, and ITC Serif Gothic.

Linotype Co. of Haugepaupe, New York, will announce the Linotronic 200P, a new Postscript image setter. The 200P comes with a 20-megabyte or 80-megabyte hard disk for font

storage and can prepare printing plates at a maximum resolution of 1,635 lines per inch. It supports Postscript fonts from Linotype and Adobe font libraries. The 20-megabyte model will sell for \$28,950, and the 80-megabyte version will cost \$34,950, the company said.

Caere Corp. of Los Gatos, California, will announce an IBM PC version of the Omnigraphics optical character recognition program. The package will be priced at \$1,995 and will include an add-in card with a 68020 processor.

Mansfield Systems Inc. of Palo Alto, California, will preview technical and financial publishing software for the Macintosh. The Techscribe product line, scheduled to ship in the second quarter of next year, will include Publishand, the cornerstone application, a text editor, a page composer with graphics editor, a section composer, a diagram and flow chart editor, a financial and scientific table editor, and a math equation editor. Publishand and the table editor will be \$95; the other products will be \$195, the company said.

Emerald City Software of Menlo Park, California, will introduce LaserTalk for IBM PCs and compatible computers, a Postscript development environment that includes a Post-

script editor, debugger, dictionary browser, and on-line documentation excerpted from the Postscript language reference manual. Already available for the Macintosh, the IBM version is scheduled to ship October 15 at a suggested price of \$399.

Digital Vision Inc. of Dedham, Massachusetts, will offer a Macintosh version of its black-and-white video capture board. The \$249.95 board will capture a 640-by-480-pixel image with 256 shades of gray.

Truvel Inc. of Chatsworth, California, will introduce rewritten software for its scanners for IBM PCs and compatible computers. The new software runs under Windows, the company said. The software will be bundled with the company's \$5,495 T23 gray-scale scanner. An upgrade policy has not been determined, according to the company.

Ring Computers Inc. of Sacramento, California, will introduce a turnkey publishing system for 386-based PS/2s and the Compaq 386.

The \$2,499 package, which runs under Ring's proprietary operating system, supports Postscript-compatible printers and typesetters and the Ultra Setter image recorder.

PC Craft Inc. of La Habra, California, will demonstrate

three PC-based turnkey desktop publishing systems, which all include Ventura Publisher. The systems range in price from \$7,695 for an 80286-based monochrome package with a Laserjet-compatible printer to \$17,995 for an 80386-based color system with a Postscript-compatible printer and flatbed scanner.

Emulation Technologies of Cleveland will announce a Ventura Publisher add-on that is said to improve the program's text import capabilities. The utility will be available in a \$100 ASCII version and versions for several word processors at \$125 each.

Genicom Corp. of Calabasas, California, will show a new 400-dpi laser printer, code-named Scorpion. The printer is built around the 8-page-per-minute Canon SX engine and will include HP Laserjet, Diablo 630, and IBM Graphics Printer emulations.

Printware Inc. of St. Paul, Minnesota, will introduce a font library for its Printscript and Printset laser printers. The library contains more than 100 font faces based on Bitstream outline fonts and optimized for Printware's 1,200-by-600-dpi printers. The company will sell the fonts in sets of four for \$240, with multipackage discounts available.

Lotus to Give 1-2-3 2.01 Users Free 3.0 Upgrade

By Ed Scannell

CAMBRIDGE, MA — Lotus Development Corp. announced last week it would offer a free upgrade to its yet-to-be-released 1-2-3, Release 3.0 to users purchasing 2.01 between now and 30 days after 3.0 is shipped.

The move is seen by some Lotus observers as an attempt to keep customers from delaying purchases until Release 3.0 is shipped. Lotus has already announced one delay in shipping the program but pledged to ship the new release by the end of the year.

"My feeling has always been that when they sensed any softening of sales due to anticipation of 3.0, they would institute this sort of program," said David Bayer, a software analyst with Montgomery Securities Inc. of San Francisco.

While Bayer doesn't think there has been any significant reduction in 1-2-3 sales, he and other analysts believe the company announced the program to ensure that it at least doesn't lose any of its typically heavy fourth-quarter sales.

The upgrade announcement included Lotus' first concession that Release 3.0 will require more sophisticated hardware than earlier versions. In the fine print of the advertisements, Lotus said that Release 3.0 will require systems with a hard disk drive and 640K of memory. In addition, the company recommended at least an 80286-based system.

Lotus officials also empha-

sized that Release 2.01 will remain on the market well after 3.0 is shipped. The company was severely criticized three years ago when it took 1-2-3 1A off the market too quickly to make way for Release 2.0.

One reason for keeping Release 2.01 alive is that users can run it on floppy disk-based systems, of which there are still a substantial number in small and medium-size companies.

Continued support for Release 2.01 also ensures that Lotus will serve PC users without expanded memory. Recent reports speculate that Release 3.0 takes up anywhere from 500K to 700K, leaving users with standard memory configurations little room for new data.

The upgrade program is effective as of September 6. First-time buyers can purchase Release 2.01 for \$495 from authorized dealers. When they return their registration card, users will receive an upgrade return envelope from the company in which they can return their 2.01 diskette and a proof of purchase when Release 3.0 ships.

Users of 1-2-3 1A can upgrade to 3.0 for \$200, while 2.01 users can do so for \$150.

The upgrade announcement also renewed debate over whether Lotus will be able to meet its late fourth-quarter ship date. At this juncture, however, most analysts are giving the company only a 50-50 chance at shipping the long-awaited program by year's end.

IBM Licenses Apollo Computer's NCS

Will Use Technology in AIX Operating System

By Martin Marshall

Apollo Computer Inc. announced last week that IBM has licensed its Network Computing System (NCS), a set of advanced software tools used to unify computer networks and to distribute programs across different computers.

According to Apollo, IBM intends to incorporate NCS

technology into its AIX operating system to enhance IBM's Distributed Services (DS) offering, but IBM would not confirm this.

"What this gives us is a basic set of building blocks, including object-oriented remote procedure call [RPC] services and tools," said Charlie Sauer, an

IBM senior technical staff member and one of the leading architects of AIX.

IBM has a number of attractive modules within NCS, one of which is Apollo's Location Broker, which services the RPCs. Sauer said, "It is also possible, hypothetically, to have a network with NCS, NFS [Sun's Network File System], and DS all acting in a complementary fashion," he said.

Datasquest Unix analyst Paul Cabbage thinks the key to IBM's attraction to NCS may be in Apollo's Network License Server (NLS), which provides a method of charging for and controlling the use of software over a network.

"The question has been one of how to charge for software over a network, and I think the answer is in pricing it by the seat. Apollo's NLS uses a software key system where the software only allows a certain number of active users to run an application at a given time," Cabbage said. "For IBM, it was clearly better to adopt this system than to develop their own."

— Scott Mace

Tops Network Operating System To Get Netbios Compatibility

WASHINGTON — Tops will announce Netbios compatibility for its Tops network operating system at next month's PC Expo, in Chicago, according to Bob Clark, director of marketing at Tops.

"We've been testing a product for two months," Clark told an audience at the Capital Microcomputer Users Forum here last week. Tops is a subsidiary of Sun Microsystems.

First customer shipments of the Netbios-compatible release will begin in early November,

according to Clark.

Clark's remarks came in response to a question about the compatibility of multiuser applications that require Netbios, such as Dbase III Plus, on the Tops network.

"Sun wants to achieve connectivity any way they can, and this is another way to do it," according to Andrew M. Seybold, publisher of the *Outlook on Professional Computing* newsletter, based in Santa Clara, California.



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News Briefs

Priam Unveils Drives For Novell Networks

Priam recently announced the availability of hard disk drives that don't require special formatting and analysis for use in file servers running Novell's Netware network operating system.

Normally, users are required to run the Compurp utility from Novell on their disk drives, which takes from 24 hours to five days to complete, according to the company.

Both internal and external Novell-Ready drives, in capacities ranging from 45 to 337 megabytes, are available now for the PC. Drives will be available for the PS/2 later this month, the company said.

Disk driver software for Novell's Advanced Netware 286 Version 2.1 is also available, the company said.

Priam said it will not charge extra for the Novell-Ready feature.

Priam Corp., 20 W. Montague Expressway, San Jose, CA 95134; (408) 434-9300.

Book Informs Sysops Of Their Legal Rights

A new book explains the legal rights and responsibilities of bulletin board system operators.

Syslaw: A Legal Guide for Sysops, a 100-page book from LLM Press, was written by two lawyers who are themselves sysops. Issues the book discusses include posting of copyrighted material, what happens when a BBS involves payment, and if posting of viruses can result in a lawsuit.

The book costs \$19 plus \$2 for postage.

LLM Press, 150 Broadway, Suite 610, New York, NY 10038; (212) 766-3785.

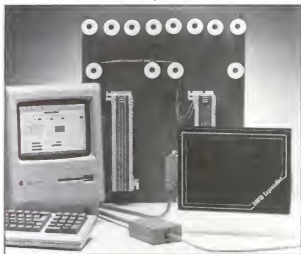
Datascopy Lowers Prices Of Its Facsimile Products

Datascopy Corp. recently lowered the price of two of its facsimile products, the company said.

The price of the Microfax facsimile board was reduced from \$1,195 to \$695, while the company's Jetfax combination scanner and facsimile board was reduced from \$2,595 to \$2,290, according to the company.

The company also said it had extended the board's warranty from 90 days to one year.

Datascopy Corp., 1215 Terra Bella Ave., Mountain View, CA 94043; (415) 965-7900.



David Systems' Expressnet product line facilitates 10-mbps Ethernet LANs over unshielded twisted-pair telephone wiring.

David Enters Ethernet Market With Expressnet

By Mark Stephens

Touting network management features, small physical size, and low price, David Systems Inc. recently entered the busy 10-mbps Ethernet-on-telephone-wire market with its David Expressnet product line, according to the company.

The Expressnet line, which is already shipping, consists of a main hub (typically mounted in a telephone closet) and small adapter units, called David TP-MAUs, installed between connected workstations and wiring outlets, according to Phil McDermott, David Systems' vice president and general manager for local area network products. Two standard telephone wire twisted pairs, which are often lying unused in office walls, are used to connect the workstation to the hub, the company said.

The \$2,495 Expressnet hub is about the size of a typical hardback book and connects up to 12 stations in a star configuration, McDermott said. Hubs can be cascaded to a maximum network size of 1,024 Ethernet devices.

Each David TP-MAU costs \$149, according to the company.

Workstations can be located up to 100 meters from the hub, while the retiming and signal amplification features of the hubs themselves allow multihub networks to span total distances of much more than 100 meters, according to the company.

The intelligent hub automatically counts packets and collisions, according to McDermott. Network administrators can communicate with the hub either through an RS-232C port or by telephone through an attached modem, gathering statistics, troubleshooting the network, turning ports on or off as needed, and resetting counters, according to the company.

David Systems said its product line is compatible with the draft IEEE 802.3 10-Base-T standard for 10-mbps transmission over telephone wire. If the final 10-Base-T standard should vary significantly from the draft standard, David Systems will change its product to conform to the new standard, McDermott said.

David Systems Inc., 701 E. Evelyn Ave., Sunnyvale, CA 94086; (408) 720-8000.

3Com Releases Details Of 3+ Upgrade for OS/2

Hikes Prices of Many Products

By Mark Stephens

Users of 3Com Corp.'s 3+ network operating system who are planning to upgrade to the company's OS/2-based 3+Open product will need a 386 server, 4 megabytes of RAM, and at least \$1,695 to pay for the upgrade, according to 3Com, which announced upgrade details last week, along with a number of product price increases.

3+Open is scheduled to ship in October, while the various 3+-to-3+Open conversion packages will not be available until December, the company said.

The \$1,695 price for PC servers currently running 3+ includes OS/2 software for the server and network software for DOS and OS/2 workstations, 3Com said. The price is for a single server, but the 3+Open LAN Manager Advanced System software is licensed for an unlimited number of users operating on that server.

The 3+Open LAN Manager Advanced System for customers not currently using 3+ will cost \$2,995, according to 3Com. An entry-level version of the product, which is limited to five users, will cost \$995.

The conversion price for

3Com's 3S/400 servers will be \$1,995, reflecting the additional tape backup and diskless workstation support supplied with that product, as well as a bundled five-user DOS license, 3Com said.

Customers converting their 80186-based 3S/200 or 3S/Server3 servers to 3+Open will have to pay \$7,995, which covers not only the 3+Open software, but a hardware conversion bringing the earlier units up to the 3S/400 standard, including an 80386 motherboard and a total of 4 megabytes of RAM.

3Com also announced more than 50 product price increases, effective October 1. Of 3Com's network adapter cards, only the Tokenlink+ price was raised, from \$895 to \$945, according to the company. Among servers, the 3S/400 will rise from \$12,495 to \$12,995. An unlimited license for the company's DOS-based 3+ network operating system will rise from \$2,100 to \$2,495. From 3Com's Enterprise Systems Division, the price of a Network Control Server will increase from \$10,500 to \$12,000.

Ethernet Corp., 3165 Kifer Road, Santa Clara, CA 95052; (408) 562-6400.

Multistar Provides an Upgrade to Fiber

By Mark Stephens

Codenoll Technology Corp. said it is shipping the Codenoll Multistar modular multipoint repeater — a rack-mounted unit that connects up to 15 Ethernet segments — to make life easier for users who want to mix and match twisted-pair, thick, thin, and fiber-optic Ethernet.

"Though we are primarily a fiber-optic networking company, we wanted to be able to offer a migration path so users can upgrade to fiber as their network and their network needs

grow," said Codenoll president Michael Coden. "Multistar is the heart of this migration strategy."

Up to four Multistars can be stacked to connect up to 60 Ethernet segments, Codenoll said. The Multistars can also be cascaded to provide multilevel, hierarchical structured cabling systems.

By combining Codenoll Multistars with Codenoll's Costar passive fiber-optic stars, a nine-level structured cabling system

can be implemented in Ethernet without bridges, gateways, or routers, Codenoll said.

There are nine separate components in the Multistar product family, and all are available now, according to Codenoll. The 4300 multipoint repeater chassis costs \$1,095. The \$495 3310 fiber-optic point-to-point Ethernet transceiver allows the Multistar to operate as an active fiber-optic star, linking devices up to 2.8 miles apart. The 3311 fiber-optic point-to-point repeater module connects two or more Multistars at distances up to 2.8 miles and costs \$695. The 3051 fiber-optic Ethernet PC connection costs \$995.

Codenoll's 4352 twisted-pair Ethernet kit costs \$325 for a module and transceiver. The 4350 thin Ethernet module costs \$230. The 4351 transceiver interface module costs \$175. The 3331 fiber-optic multipoint repeater module costs \$795, and the 3030B fiber-optic Ethernet multipoint transceiver costs \$795.

Codenoll Technology Corp., 1088 N. Broadway, Yonkers, NY 10701; (914) 965-6300.



The Codenoll 4300 multipoint repeater is one of the nine components of the Multistar repeater, which connects up to 15 Ethernet repeaters.

Arcnet Hubs Stack to Serve Up to 64 Ports

Trying to save space in crowded wiring closets, Standard Microsystems Corp. has introduced eight-port Arcnet active hubs that are stackable, allowing up to 64 ports to be served by the same amount of floor or shelf space.

The stackable hubs will be available in mid-October in versions for coaxial cable and unshielded twisted-pair wire, priced at \$549 for the coax versions and \$649 for the twisted-pair versions, the company said. Mixed coax and twisted-pair networks can be configured by interconnecting hubs of different types.

The hubs can be stacked up to eight units high, and multiple stacks can be placed side by side, the company said. Hubs are interconnected through the use of telephone-type jacks on the back of each unit, freeing up the front ports to serve workstations.

The new hubs are not only smaller than earlier products, but more reliable,



Stackable SMC hubs are linked through a rear-panel interconnection system.

since the power supply for each unit is now remotely mounted on the power cord, the company said.

Standard Microsystems Corp., 35 Marcus Blvd., Hauppauge, NY 11788; (516) 273-3100.

— Mark Stephens

Gateway LANs to Get Recent Novell Netware Update

Gateway Communications Inc. will announce today that a more recent version of Novell's Netware network operating system will be available for Gateway's LANs.

Version 2.11 of Novell's Advanced Network 286 and of System Fault Tolerance (SFT) Network 286 are available on G/Net and G/Ethernet LAN Starter Kits, and on G/Ethernet 16-bit, G/Ethernet Micro Channel, and G/Token Ring File Server Kits, according

to the company.

The two-node G/Net and G/Ethernet Advanced Network 286, Version 2.11 Starter Kits cost \$3,330 and \$3,415, respectively. G/Ethernet 16-bit and G/Ethernet Micro Channel Advanced Network 286, Version 2.11 File Server Kits cost \$3,160, while G/Token Ring Advanced Network 286, Version 2.11 File Server Kits cost \$3,690. All are available now.

Prices for the LAN Starter Kits and File Server Kits featuring SFT Network 286, Version 2.11, which will be available later this month, are not determined yet, the company said.

Gateway Communications Inc., 2941 Alton Ave., Irvine, CA 92714; (714) 553-1555.

— Sharon Fisher

Bellsouth Gateway Lets Users Access Information Services

By Scott Mace

ATLANTA — Bellsouth late last month introduced an information gateway service here, permitting PC users to access introductory information as well as the actual services of eight on-line providers.

Bellsouth said its Transtext Universal Gateway (TUG), an advanced routing and transmission gateway for information service providers, allows customers to dial one telephone number to reach multiple local and national information services via their local phone line.

The company called the rollout a "controlled introduction" that will let Bellsouth modify or alter the gateway based on marketplace demands.

Bellsouth has contracts with 18 service providers. Services on-line include Travel+ and Newsnet. Services to be added shortly include Delphi, Easynet, Innovest on Wall Street, International Businesses, and Paperbase.

Eight additional companies have agreed in principle to participate, pending finalization of their gateway agreements with Bellsouth. Those include Compuserve, Dialcom, Dialog, Easys

Sabre, OAG Electronic Edition Travel Services, and The Source.

During daytime hours, Bellsouth charges \$3 per hour for use of its local packet network and \$1.20 per kilosegment (approximately 64K) accessed by users. Evening and weekend rates are \$1.50 per hour and 80 cents per kilosegment. Users do not pay any charge for viewing introductory information and menus. On-line providers are each adding their own hourly cost, which may or may not be the same as the charge for accessing those services without using the gateway, said Bellsouth spokeswoman Sydney Shaw.

Bellsouth expects to attract about 300 business and residential customers to the gateway during the controlled introduction.

While TUG represents one of the few information services approved by U.S. District Judge Harold Greene for Bell Operating Companies to provide, Bellsouth and other BOCs are continuing to push for the right to provide more information content themselves.

Latest Netware Release Eliminates Copy Protection, Adds PS/2 Drivers

By Mark Stephens

Network users who are tired of dealing with key cards and gendata diskettes will be happy to hear that Novell Inc. has announced a new version of Netware that eliminates copy protection.

"We have been thinking about eliminating copy protection for more than a year," said Mark Calkins, vice president of marketing for Novell's Software Group. "Besides making it much easier

for users to install Netware, eliminating copy protection will allow our dealers and VARs to sell upgrades right off the shelf."

With copy protection, each upgrade had to be serialized for a specific key card, a piece of identification hardware installed in the Novell server.

Beyond the elimination of copy protection, Netware 2.12 is substantially the same as 2.11, Calkins said, except for the addition of drivers for IBM's PS/2 Models 50 Z and 70.

SFT Network 2.12 and Advanced Network 2.12 are available immediately, with ELS Network Level II, Version 2.12, scheduled to ship in October.

ELS (Entry-Level Solution) II is a \$1,395-per-server follow-up to Novell's ELS I product, which is based on the earlier Network 2.0a, Novell said. ELS II supports a maximum of eight users and is compatible with all adapter cards supported under Netware 2.1. Users can run OS/2 or any version of DOS on their workstations, with Macintosh support scheduled for early 1989.

ELS II offers fault-tolerant features such as Hot Fix, read-after-write verification, and directory and file allocation table duplication, as well as resource accounting and extended security.

Novell also announced that it has bought 60 percent of Indis Software Inc., a Los Angeles-based developer of mainframe connectivity software. Indis's first job will be to make its software compatible with Message Handling Service (MHS), a key Netware protocol.

"After they are MHS compatible, I'm sure the next thing we'll see is a Profits interface for Netware," said Tom White, chairman of Infonetics, a market research firm in Santa Clara, California.

Novell Inc., 122 E. 1700 S., Provo, UT 84601; (800) 453-1267.

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Redirector Extends Network Gateways to Stand-Alone PCs

By Scott Mace

Techland Bluelynx has announced an asynchronous LAN redirector that extends network gateway capabilities to stand-alone PCs.

Companies with Bluelynx 5250 Gateways can now redirect network 5250 node capabilities and IBM System/3X minicomputer access to non-LAN PCs and PS/2s through asynchronous connections.

The Bluelynx/5250 Redirector works with Bluelynx's 5250 Gateway packages in local and remote settings. Up to nine

stand-alone PCs and PS/2s have access to all 5250 node functions when linked to the network through the Redirector and its inexpensive async connections.

Using simple telephone connections, the Redirector gives business travelers vital information. Field reps can use a portable PC and async connections to call in to a 5250 node on their LAN and connect to the host from a customer site. The Redirector combines the benefits of Bluelynx's LAN gateway and its 5250 Async Cluster into one product.

The Bluelynx/5250 Redirector is also an alternative to buying more LAN adapters and cables. For example, if most users access a System/3X but only half use the LAN, the Redirector works with the gateway to make the connections.

Once connected, the Bluelynx/5250 Redirector requires no further operator intervention. It provides a physical and logical link between the LAN gateway and the stand-alone devices and keeps track of the connections while the node operators start and stop the sessions.

Setup is easy because the user configures only the PC's com port and doesn't need any additional hardware.

The Bluelynx/5250 Redirector costs \$495.

Bluelynx Techland, 63 Maple St., P.O. Box 335, Friendsville, MD 21531; (800) 832-4526.

Retix Says Series Will Run on PCs, Support GOSIP

By Sharon Fisher

Retix said it will release in the fourth quarter a series of communications products that run on PCs and support the Government Open Systems Interconnection Profile (GOSIP) specifications.

Versions for both Unix and DOS will be available, the company said.

The products include File Transfer, Access, and Management (FTAM); X.400 Message Handling; and X.500 Director Server, the company said. They support Open Systems Interconnection (OSI) protocols and follow the GOSIP specifications for OSI protocols.

The software runs on one of two coprocessor cards from Retix: the PC-320 WAN Coprocessor Card, which is configured with transport communications software and supports network services for one or two X.25 networks or private lines, and the PC-620 802.3 LAN Coprocessor Card, which supports Ethernet or Thin Ethernet communication. Each card includes 1.5 megabytes of RAM and can be used with an IBM PC AT or 80386-based PC, the company said.

Prices range from \$600 to \$700 per user for the X.400 product under either DOS or Unix, \$300 to \$400 per user for the FTAM DOS product, and \$500 to \$600 for the FTAM Unix product, said Mike Winters, vice president for North American sales. Prices for the X.500 product, which will be available in the first quarter of 1989, are not yet determined, he said. The cards are included in the price.

Retix, 2644 30th St., Santa Monica, CA 90405; (213) 399-2200.

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Banyan, FTP Agree To Customize FTP's PC/TCP Software

To provide greater support for TCP/IP in the Vines network operating system, Banyan Systems Inc. has signed an agreement with FTP Software Inc. for a customized version of FTP's PC/TCP software.

Support for FTP's Transmission Control Protocol/Internet Protocol (TCP/IP) product allows PC users to transfer files, transmit electronic mail, access minicomputers, and perform remote tasks on multivendor computer systems, Banyan said.

Previously, Vines servers could act as TCP/IP routers and communicate with each other using TCP/IP, but PCs on the LAN couldn't run TCP/IP applications, said David Penzias, Vines product manager.

The software will run on any LAN type that is supported by Vines, including Ethernet, Token Ring, Arcnet, Promote, and Starlan, the company said. It costs \$2,995 per server and is available now. A version that includes the routing option costs \$3,995.

Banyan Systems Inc., 115 Flanders Road, Westboro, MA 01581; (508) 898-1000.

— Sharon Fisher

DSC Unveils Bridge, Four LAN Gateways

By Mark Stephens

Expanding its Plan series of Arcnet products, DSC Communications Corp. has added 12 products and system upgrades, including four communication gateways, an Arcnet-to-Arcnet bridge, an 80286-based diskless workstation, and a \$795 Micro Channel Arcnet adapter.

"This announcement brings the host connectivity to the Plan series that we did not have before," said John Stafford, director of marketing for DSC's Local Network Division. The gateways cost \$5,995 each.

DSC's 3270 SNA gateway supports up to 32 logical units, allowing networked PCs to emulate an IBM 327X mainframe terminal, while the 5250 gateway offers 32 logical units emulating IBM's 5250 terminal for communicating with System/3X minicomputers, Stafford said.

The asynchronous gateway offers dial-in/dial-out support for up to eight PC users either on the LAN or remote, emulating DEC VT-100 terminals. The X.25 gateway offers up to 32 simultaneous X.25 sessions. All four gateways are shipped in workstations attached as dedicated devices on the LAN.

DSC also announced an \$8,495 Arcnet-to-Arcnet bridge that allows networks to grow past the normal 255-workstation limit on Arcnet LANs.

Before DSC introduced its 150/Streamer on-line backup system, Plan-series servers could only be backed up with the network down, Stafford said. The \$5,995 stand-alone backup unit and the \$1,995 streaming tape server upgrade now allow backups to be done with the network continuing to run.

DSC's 286/LAN Station, which costs \$2,495, is an 80286-based diskless workstation running at 12 MHz with a built-in Arcnet adapter, boot PROMs, and a 14-inch black-on-white display, DSC said.

All products are shipping now. DSC Communications Corp., 3101 Scott Blvd., Santa Clara, CA 95054; (408) 727-3101.

Device Can Produce Collated Documents at a Remote Site

Advanced Technologies International Inc. (ATI) recently announced a product that allows laser printers to print collated copies of multipage documents at a remote site.

Using The Spooler/Collator, printers can produce multiple collated copies when a user sends one copy of the document to the printer, the company said.

The device can collate up to 99 copies of a 99-page document and supports font selections, logo and letterhead printing, and signature duplication.

The Spooler/Collator resides inside an

ATI DW-2 or DW-3 laser printer. The device can be configured to work with most host systems, the company said. It can receive data either page by page or document by document.

The SP-1 version of the product has 512K of RAM, while the SP-2 version has 1 megabyte. Both versions are available now. The SP-1 costs \$1,195, while the SP-2 costs \$1,495, the company said.

Advanced Technologies International Inc., 355 Sinclair-Frontage Road, Milpitas, CA 95035; (408) 942-1780.

— Sharon Fisher

Product Provides PAD Services Over Public Networks

By Sharon Fisher

Rabbit Software Corp. recently announced Rabbitbus 386 Netcom II, X.25, which provides a way for users to communicate over domestic and international public packet-switched networks.

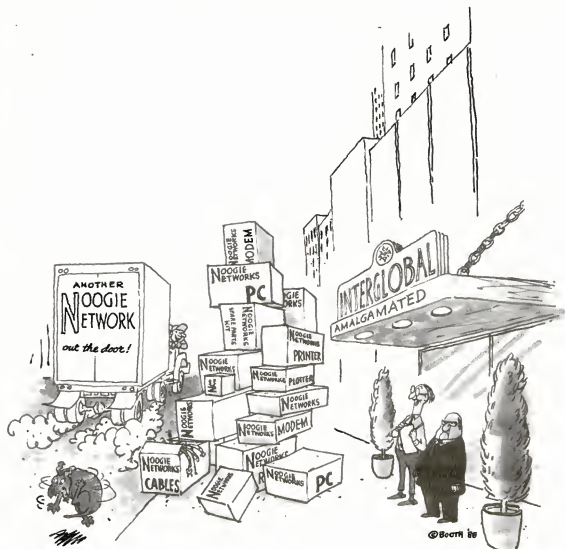
The software, which runs under the SCO Xenix 386 System V operating system, performs packet assembler-disassembler (PAD) services for asynchronous terminals, or PCs emulating such terminals, attached to the 386-based PC, the company said. A PAD breaks a message into units called packets, which are then sent over the packet-switched network and reassembled at their destination by another PAD.

In addition, the software can accept terminal log-ins from the packet-switched network, meaning users from remote locations can call the 386-based PC. Xenix 386 file transfer, E-Mail, and application support functions are accessible by those users, the company said. An application programming interface that allows users to write applications which communicate over the packet-switched network is also included, according to the company.

The product consists of an intelligent synchronous communications adapter as well as the communications software. The intelligent board offloads processing from the PC, improving communications performance, the company said.

The product costs \$2,895 and is available now.

Rabbit Software Corp., Great Valley Corp. Center, 7 Great Valley Parkway E., Malvern, PA 19355; (215) 647-0440.



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Micro-to-Mainframe Update Is 70 Times Faster, Firm Says

By Sharon Fisher

Attachmate Corp. will announce a new version of its Extra communications software today that lets PC users on a LAN communicate with a mainframe more than 70 times faster than with previous versions, the company said.

Release 1.3 of the software can communicate with a mainframe via IBM's Token Interface Coupler (TIC) in either an IBM 3174 communications controller or an IBM 3275/3745 front-end communications processor. These two types of devices off-load some of the

communications processing, reducing the load on the mainframe.

A TIC is essentially a Token Ring adapter for the mainframe. Attachmate said, which means it supports transmission speeds of up to 4 mbps and allows the mainframe to appear as another node on the LAN. In comparison, a Synchronous Data Link Control gateway supports speeds of only up to 56,000 bps.

Extra also includes a utility that allows users to load and unload certain software modules from memory while connected

to the mainframe. This frees more memory space for PC applications. Such modules include host graphics and the High Level Language Application Programming Interface (HLLAPI), which allows users to write PC programs that communicate with mainframe programs.

Other enhancements to the product include improved 132-column display support for EGA, VGA, and 8514 monitors, which allows users to display mainframe spreadsheet and print files within the width of a PC screen. Extended 3270 terminal functions, such as alternate cursor and the use of light pens, are also supported.

Extra, Release 1.3 is available now for \$425. Existing users can upgrade for \$75. Attachmate Corp., 13231 S.E. 16th St., Bellevue, WA 98006; (206) 644-4010.

Cisco to Announce SNMP Support for Network Products

By Sharon Fisher

In an effort to support the burgeoning TCP/IP network management standards, Cisco Systems Inc. will announce today that its communications products now support the Simple Network Management Protocol (SNMP).

As of October, the protocol will also be a standard feature of Cisco's internetwork gateways and terminal servers, the company said.

Current users of Cisco products can have the SNMP software incorporated into their products at no charge if they subscribe to Cisco's software upgrade program; otherwise it costs \$100 per unit.

A number of protocols had been considered for a standard way of managing Transmission Control Protocol/Internet Protocol (TCP/IP) networks. (See "Group Split on TCP/IP Management," November 30, 1987.) Vendors and users were split between providing an easy migration path to Open Systems Interconnection (OSI) network management protocols and making it easy to support large networks.

The Department of Defense's Internet Activities Board, which governs TCP/IP standards, decided in February to recommend SNMP, which is based on the earlier Simple Gateway Monitoring Protocol (SGMP). Cisco will continue to offer SGMP as an option.

Cisco plans to demonstrate the protocol at the third TCP/IP Interoperability Conference, in Santa Clara, California, at the end of the month.

Cisco Systems Inc., 1360 Willow Road, Suite 201, Menlo Park, CA 94025; (415) 326-1941.



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Laguna Labs Ships 1 2 3/X Software For Data Transfer

Laguna Laboratories Inc. recently announced a software product that allows users to transfer data between IBM System/3X minicomputers and Lotus and Symphony data files on a PC or compatible.

The menu-driven 1 2 3/X software product allows a user to download System/3X data into WK1, WR1, WKS, or WRK format files, the company said. It also features context-sensitive help for ease of use.

With the 1 2 3/X software, users can also print PC spreadsheet reports on any System/3X printer, according to the company.

No additional file transfer software is required. In addition, the software is compatible with all adapter boards that emulate IBM 5251 terminals, according to the company.

The software costs \$250 and is available now. It is also available with an unattended file transfer option for \$350, the company said. Technical support is included.

Laguna Laboratories Inc., 17192 Gillette Ave., Irvine, CA 92714; (714) 724-0500.

— Sharon Fisher

News Briefs

Phar Lap Releases New 386/Asm/Link Version

Phar Lap Software Inc. recently released Version 2.0 of the 386/Asm/Link software development toolkit.

The toolkit includes a developer's version of 386/DOS-Extender, Phar Lap's protected-mode run-time system, as well as an 80386 assembler, linker, and debugger.

The new version adds the capability to call real-mode functions from protected mode, complete control of interrupt processing, and flexible allocation of conventional and extended memory. The run-time memory requirements for 386/DOS-Extender have been reduced to approximately 100K.

386/Asm/Link costs \$495. Current owners can upgrade for free until October 1; then it will be \$125. Phar Lap Software Inc., 60 Aberdeen Ave., Cambridge, MA 02138; (617) 661-5150.

Wendin Ships Updated Version of Its DOS OS

Wendin Inc. has released Version 2.15 of Wendin-DOS, its multitasker and multitasking DOS-compatible operating system.

The new version supports bootable hard disk partitions of up to 4 gigabytes, as well as RLL hard disks and DOS 3.3 extended partitions. Version 2.15 also provides correct functioning of the Copy command on all PCs and improves piping and shell-out functions.

Wendin DOS 2.15 is \$99 through September 30, including free upgrades and lifetime free support.

On October 1, the price will rise to \$139 and a high-powered text editor will be added. Users who buy it after September 30 will not receive the lifetime free upgrades.

Wendin Inc., P.O. Box 3888, Spokane, WA 99220-3888; (509) 624-8088.

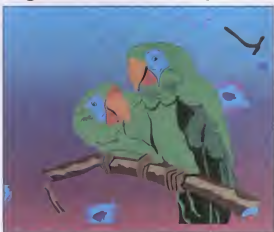
Company Enhances Its C86 Plus C Compiler

Computer Innovations Inc. is shipping Version 1.2 of C86 Plus, its C compiler for Intel's family of microprocessors.

The update is designed to work with the company's C86 Plus ROM Development System as well as the Intel ICE development systems, making it easier to produce ROM-based code.

Continued on Page 25

Design Programs Support High-Resolution Graphics



Micrografx's Designer, Version 1.3 illustration package and Design Plus drawing program are slated to ship by mid-month.

The programs will include a driver to support the Motrix film recorder, a device commonly used by slide service bureaus. The driver supports graphics with resolutions of up to 4,000 lines. User-defined gradation fills allow users to create custom backgrounds in several million true 24-bit colors, according to Paul Grayson, chairman and chief executive officer of Micrografx.

Desktop Publisher for PC Has Mac-Like Interface

By Bob Ponting

Pinpoint Publishing will release this month an entry-level desktop publishing program for the PC that features page layout and graphics tools and a Mac-style user interface.

The product, called Pages, lets users flow text and bit-mapped graphics into page templates or design free-form layouts, said Gregory Hastings, vice president of marketing at Pinpoint. Pages has a Mac-like graphics interface, including menus and dialog boxes. Visual operations such as object rotation and multicolumn formatting are presented as graphical "do by example" menu selections, Hastings said.

Pages includes an object-oriented graphics toolbox for drawing lines, polygons, arcs, circles, and ellipses. Although the first release doesn't support color, objects can be filled with 32 gray patterns, Hastings said.

Pages has an integrated text editor patterned after Microsoft Works. It supports three vector fonts that can be scaled from 6 to 126 points, although character quality deteriorates above 36 points, Hastings said. There is also a selection of bit-mapped headline fonts in sizes between 24 and 48 points.

The program can import several bit-mapped file formats, including GEM Paint, PCX, Art clip art, and Macintosh Paint. Pages can also directly import Lotus WKS worksheets.

Pages supports the DCA/Intel Communicating Applications Standard (CAS) and can send composed documents via a CAS-compatible fax board.

The DOS version of Pages costs \$79.95 and will begin shipping at the end of the month, Hastings said. It requires a PC or PS/2 compatible running MS-DOS 3.0 or later with at least 512K of RAM, a graphics adapter, and a mouse. A Mac version will be available at the end of October for \$199.

Pinpoint Publishing, 5865 Doyle St., Suite 112, Emeryville, CA 94608; (415) 654-3050.

Softlogic Program Helps Manage Hard Disk Files

Folder System Simplifies Screen

By Ed Scannell

Softlogic Solutions Inc. will announce next week a file organization and management program that lets users more easily manage hard disk files and use DOS commands.

Classfile is a "folder system" similar to the one used with Apple's Macintosh. The folder system allows users to visually group related files on a single display line.

The folder system does away with the need to create sub-directories and permits users to access files and manipulate essential functions, such as Move and Sort, more efficiently.

"We wanted to create a simple, uncluttered work-screen environment that would be equally attractive to novice, intermediate, and expert users," said Ed Tolson, Softlogic's president.

The program also features a point-and-shoot function, which lets users start up and access files and applications with a single keystroke, and a system that lets users create their own menus.

Users can also extend the point-and-shoot concept, build-

ing relationships between data files and applications programs, Tolson said. By doing this, users can design a system that allows users to load data files and their applications in one step.

The new menu system enables users to automate repetitive tasks by using pull-down menus or expert control keys. The menu system can be used to automatically load data files when calling an application.

Three additional features help users more quickly identify the contents of files. The first is the capability to annotate directory listings by adding 35-character descriptions of the contents of files and folder listings. The Browse function lets users move the pointer to a file and see its first 10 lines. And the Quickedit function gives users instant access to a full-screen view of the contents of data files.

Classfile runs on IBM PCs or compatibles with 256K of memory and MS- or PC-DOS 2.0 or later. The product is available immediately for \$89.95.

Softlogic Solutions Inc., 1 Perimeter Road, Manchester, NH 03103; (603) 627-9900.

Name	Description	Size	Date
Basics... .hlp		643	09/17/88
Classfile... .bat		426	09/08/88
Classfile... .hlp	Start up Classfile	12	09/08/88
Classfile... .hlp	Text editor	79,554	09/08/88
Classfile... .hlp	Deposited memory driver	18,022	09/08/88
Classfile... .hlp		882	09/08/88
Classfile... .hlp		23,292	12/28/88
Classfile... .hlp		113	09/08/88
Classfile... .hlp	MS Configuration file	16,773	07/25/88

Classfile's Browse feature helps users quickly identify file contents by letting them move the pointer to a file and see its first 10 lines.

Boeing Leaving PC Software Business

By Stuart J. Johnston

SEATTLE — Announcing that it is getting out of the microcomputer software business, Boeing Computer Services (BCS) is selling its Boeing Calc and Graph products to employees at "substantial discounts" and has no intention of upgrading either package.

Boeing employees and company organizations can purchase Calc for \$50 and Graph for \$80, according to the August issue of *Online*, an internal BCS newsletter. The list price for both products is \$395.

Although BCS officials could not be reached for comment, the newsletter went on to outline the bleak future for the products. "While Boeing Calc and Graph are widely regarded as very good products, potential purchasers should not expect any new releases or long-term support," the newsletter stated.

"The division will, however, continue to support existing distributor agreements that run through most of 1989," the article continued.

The fate of the products has

been uncertain since last year, when a deal to sell the BCS microcomputer products group to a West German firm went sour.

At its introduction, Boeing Calc attracted the attention of microcomputer users because it supports extremely large spreadsheets of 16,000 rows by 16,000 columns by 16,000 pages. Boeing Graph, a graphing package that produces stackable 3-D graphs, has since reemerged as Foxgraph from Fox Software, the Perrysburg, Ohio, publisher of the Foxbase package.

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Tools Package Simplifies SAS System

By Robert Snowden Jones

In hopes of simplifying the use of the database and report-writing features in the PC version of the SAS System, SAS Institute Inc. is giving users the SAS/Assist system tools package.

In addition, Geographic Data Technology Inc. said it has released conversions of its most popular map files into data sets that can be used by the SAS System graphics module for PCs.

SAS/Assist is designed to help users with little or no training to operate the SAS System tasks, which include statistical analysis and graphics, the company said.

SAS/Assist permits users to read data from a flat file into an

SAS data set, produce tabular reports from data in the sets, generate presentation and information graphs, generate descriptive statistics and statistical reports, and save SAS programs to be run in another session, said the company.

A desktop tools section of the program contains a calculator, phone directory, and access to SAS/FSP, a letter-writing module.

To take full advantage of SAS/Assist's features, organizations should have SAS/FSP, SAS/Graph, and SAS/Stat, according to the company.

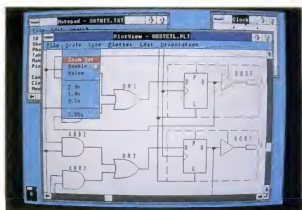
Geographic Data Technology said it has converted its color boundary map files for use with

the SAS/Graph module. The files include: 1987 Nationwide 5-Digit ZIP Codes, Block Groups, Census Tracts, Nelson's Designated Market Areas, Arbitron's Area of Market Influence, Metropolitan Statistical Areas, and Minor Civil Divisions, according to Geographic Data Technology.

Prices for the sets of data vary. The 1987 Nationwide 5-Digit ZIP Code file, for example, cost \$5,000, the company said.

SAS Institute Inc., SAS Circle, Cary, NC 27512; (919) 467-8000.

Geographic Data Technology Inc., 13 Dartmouth College Highway, Lyme, NH 03768; (603) 795-2183.



Plotview allows users to preview and edit images in different views before sending them to HP's plotter or a variety of printers.

Plotview Allows Users to Preview HP Plotter Files

By Bob Ponting

A new Windows application from Ajida Technologies Inc. lets users preview Hewlett-Packard plotter files on-screen and print them on any Windows-supported printer.

Plotview lets users view and edit Hewlett-Packard Graphics Language (HPGL) files before printing them on an HP plotter, said David Berkovec, marketing manager for Ajida. Users can rotate plots and scale them to any size, he said.

The program supports dynamic pan and zoom and lets users copy any portion of the plot into documents or images in other Windows applications via the Windows clipboard, the company said.

Plotview can print HPGL plots on any dot matrix, ink-jet, or laser printer supported by Windows, Berkovec said. This feature is useful for getting a quick hard copy before sending a plot to a slower high-resolution pen plotter, he said. In addition, Plotview lets users print HPGL files without a plotter, he said.

The program will run on any PC that runs Microsoft Windows 2.0 or later, or Windows 386. The \$59 program does not include a Windows run-time system but does come with a 30-day money-back guarantee.

Ajida Technologies Inc., 613 Fourth St., Santa Rosa, CA 95404; (707) 545-7777.

Symphony, Lotus Utilities Updated

By Peggy Watt

Frontline Systems this month is releasing a Lotus Symphony version of its add-in project management Project Calc and updates to its 3-2-1 Blastoff spreadsheet compiler for 1-2-3.

The new Project Calc adds a

project management program to the integrated Symphony package.

Project Calc integrates with a Symphony spreadsheet worksheet to offer such project management features as Gantt and

PERT charts and reports on schedule dates and costs, said Dan Fylstra, Frontline Systems' president. Project Calc also supports multiple projects on one worksheet.

All features of the \$149.95 product are the same as the version Frontline Systems released for 1-2-3 in March, Fylstra said.

The new 3-2-1 Blastoff, Version 2.0 is now available in two versions and no longer requires a math coprocessor. It converts spreadsheet data into machine code for compilation that is at least five times faster, Fylstra said. The \$99.95 standard edition uses a new, faster, software-based floating-point math library and runs on systems with or without a math chip. The \$149.95 Premium Edition uses the floating-point or a math coprocessor, if one is present, and draws on a 32-bit math library when run on 80386-based systems for even faster performance, he said.

"We wanted to make something less expensive for people who didn't have or want a math chip but wanted more speed," Fylstra said. He estimates the update compiles worksheets more than 10 times faster when using the math chip, however.

Both versions improve the "secure worksheets" feature to let users distribute worksheets that hide formulas. They also offer an optional compiler menu shell with Lotus-style commands for easier use. Both are also smaller, faster, and handle worksheets of unlimited size.

Users of the Standard Edition can upgrade to the Premium Edition for \$69.95; users of 3-2-1 Blastoff, Version 1.0 can upgrade to the Premium Edition for \$35.

Frontline Systems Inc., P.O. Box 7408, San Francisco, CA 94120; (800) 451-0303.

Visible Systems Ships Module With Prototyping Capabilities

Visible Systems Corp. has released a full-function application prototyper and simulation tool as the fourth module of the Visible Analyst Workbench CASE program.

The Visible Prototyper lets systems analysts, developers, and programmers design a preview model of a microcomputer or mainframe software system for viewing before complete development. It is intended to reduce errors and provide better system documentation.

The module has four levels of prototyping capabilities, including features for screen design,

field masking, panel linking and branching, and database support.

The Visible Prototyper costs \$595. It is also available as an integrated module of the \$2,380 Visible Analyst Workbench, which includes Visible Analyst, Visible Rules, and Visible Dictionary, also sold separately for \$595 each. A version with multiple security-level access to run under Novell Advanced Network is being developed.

Visible Systems Corp., 49 Lexington St., Newton, MA 02165; (617) 969-4100.

—Paula S. Stone



Visible Prototyper has four levels of prototyping capabilities for programmers and systems analysts developing applications.

Atlas Draw Complements SLP's Mapmaking Program

By Bob Ponting

Complementing its existing graphics package for mapmakers, Strategic Locations Planning has begun shipping a digitizing and freehand drawing program called Atlas Draw.

The \$750 package for PCs lets users trace paper maps with a digitizing tablet or modify existing boundary files interactively on-screen, according to Stephen Poizner, president of SLP.

The program is designed to make it easy for users of SLP's Atlas Graphics graphical database to modify and combine maps or draw specialized maps from scratch, he said. Atlas Draw supports 15 kinds of digitizing tablets for tracing paper maps. It also lets users modify pre-existing boundary maps by deleting, moving, copying, rotating, translating, or scaling boundaries. Regions can be combined based on their union or split based on their intersection.

The program can automatically create corridors of any width around curves or points to show planning zones or areas that would be affected by highway construction, Poizner said. Math functions in Atlas Draw enable it to calculate the perimeter, geographical center, and area of a region and the distance between any two points.

The values can be viewed on-screen or exported as ASCII data to Atlas Graphics or a spreadsheet.

The program will run on any IBM PC or PS/2 compatible with at least 512K of RAM, a graphics card, and two disk drives.

The package supports most common tablets, mice, printers, and plotters.

Strategic Locations Planning, 4030 Moorpark Ave., Suite 123, San Jose, CA 95117; (408) 985-7400.

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*Personal Computer AT, AT and PS/2 are trademarks of International Business Machines Corporation. †Photograph depicts optional equipment. Complete price list available upon request. CompuStar 80286 base system (\$1995) includes built-in VGA/EGA display adapter, one diskette drive with controller, two serials, parallel and mouse ports, keyboard and 220 watt power supply.

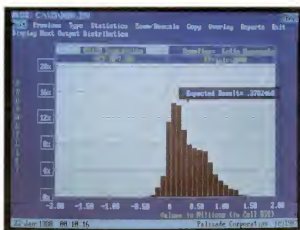
Software Takes Risk From 1-2-3

By Scott Mace

There's one "what if" game that MBAs hate to play: What if the spreadsheet numbers at the heart of your assumptions are shaky?

Software vendors are helping 1-2-3 users cope with uncertainty. Beginning this year, Harvard Business School will require all 800 incoming MBA students to use @Risk, a Lotus 1-2-3 add-in. @Risk uses probability and simulation techniques to evaluate uncertain or "risky" spreadsheet models.

@Risk lets users set up, execute, and view the results of risk analyses for both existing and new spreadsheet models. Risk analysis should be performed if users are uncertain of the values in a spreadsheet, said officials at publisher Palisade Corp.



This year's Harvard MBA students will use the probability tests in @Risk to verify their spreadsheet entries and formulas.

The add-in lets users enter ranges of values in any spreadsheet cell. These ranges are entered as probability distributions. A risk analysis in @Risk uses Monte-Carlo-type simulation, where questionable cell values are varied across a probability distribution the user enters. Each simulation reflects

hundreds or thousands of possible "what if" scenarios, and the results tell the user the probability of any outcome occurring.

@Risk is available for \$395, with volume discounts and site licenses available.

Palisade Corp., 2189 Elmira Road, Newfield, NY 14867; (607) 564-9993.

Two Companies Ship Job Tracking Software

By Paula S. Stone

Two new personnel tracking packages were introduced recently by Abra Cadabra Software and Ideal Personnel Systems. Both programs are designed to automate recruiting and employee record tracking and management tasks.

The new Abratrak works with Abra Cadabra Software's Abra 2000 Human Resource System. The PC-based packages form an integrated system that stores and processes information about job candidates and company employees, said Guy Bohner, Abra Cadabra's president.

Abratrak tracks open job requirements and stores information

about applicants. It also tracks such information as the average time to fill a position and generates reports to help evaluate the effectiveness of advertising or recruiters.

The program provides more than 40 standard reports and can generate custom reports using selected criteria from Abratrak's built-in report generator or using Dbase-compatible files, Bohner said.

The program contains standard rejection and acknowledgment letters and an Abratrak word processor for custom correspondence. It also performs Equal Employment Opportunity (EEO) analyses to create

reports for the Federal Affirmative Action program.

The three-family Ideal Personnel Systems (IPS) package tracks a variety of job search activities, including following openings, applicant information, interviews, and EEO activity. IPS can search a candidate database and display findings based on such selection criteria as name, related experience, education, and salary history, said Edward Walker, IPS director of development.

The user can define, preview on-screen, and produce reports from IPS databases and also generate daily activity reports, Walker said. IPS-1 can create repetitive letters and is geared toward the corporate user. The related IPS-2 package adds the capability of tracking recruiting activity by job order. For temporary services, IPS-3 offers billing information and payroll reports.

IPS programs are scheduled to ship in mid-September and cost \$1,495 each, Walker said. Each network version costs \$1,995 plus \$950 for a site license for each workstation. Each product is available through November at the introductory price of \$895, he said.

Abratrak, also shipping now, runs on PC compatibles with 384K of memory. Single- and multiuser versions cost \$995 each, and a Macintosh version is scheduled for release in the fourth quarter, Bohner said. Abra 2000 for both the Mac and PC compatibles costs \$495 to \$2,385, depending on options.

Abra Cadabra Software, 5510 Ninth St. N., St. Petersburg, FL 33703; (813) 525-4400.

Ideal Personnel Systems, 4224 N. 15th St., Milwaukee, WI 53209; (414) 372-2096.

SEA Utility Package Compresses Program Files, Saves Disk Space

A utility program that compresses most program files with .EXE or .COM extensions to save disk space is now available from System Enhancement Associates (SEA).

The AXE program can save from 10 to 60 percent of the disk space by compressing .EXE and .COM program files not in use, according to SEA.

The program automatically decompresses the files as they are loaded into memory for execution. AXE imposes no speed loss for program execution, according to Andrew Foray, SEA vice president.

The program will not work with files that use internal file overlays because these programs may refer to a file that is compressed and stored on disk while the program itself is active in memory, according to Foray. AXE uses the Dynamic Lempel-Ziv compression technique, the company said.

AXE runs on PC compatibles with 128K of RAM and DOS 2.1 or later, the company said.

System Enhancements Associates, 21 New St., Wayne, NJ 07470; (201) 473-5133.

— Paula S. Stone

Computer Associates Updates MRM Family

By Alice LaPlante

Atrium Information Group has updated its Micro Resource Manager family of products to track installation of fewer than 100 PCs.

The \$995 update, MRM 100, contains the same features as others in the MRM line and is designed to help the information center or microcomputer manager control the use and distribution of microcomputer resources, while giving more support to end-users.

There are two current versions of MRM. The \$495 MRM Professional is a full-blown version that manages inventory and configuration and tracks warranty, maintenance, purchasing, and receiving. MRM 300 provides most of the features of MRM Professional, but it supports 300 PCs or 3,000 components.

Computer Associates, which

acquired Atrium last month, will market the MRM family in all versions through its Micro Products Division. Atrium, in Fairfield, Iowa, will also develop, market, and support the products. An update to all versions of MRM is due to ship in October. Version 3 will contain more than 50 additions and enhancements, said Kenneth Ross, president of Atrium Information Group.

The enhancements include several mass-change utilities that merge departmental records, automatic import of inventory records, and the capability to print "trouble" tickets directly from the Action Request Maintenance module with inventory of each configuration.

Computer Associates International Inc., 1240 McKay Drive, San Jose, CA 95131; (408) 432-1727.

Pinnacle's DGE Provides Wide Variety of Graphing Functions

By Stuart J. Johnston

Pinnacle Publishing is now shipping DGE, a set of high-resolution color graphing functions for C and Dbase developers to include in applications.

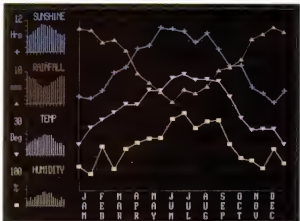
It lets programmers create a wide variety of chart types, including bar, high-low-close, pie, polar, polyline, vector, time series, and Cartesian graphs, according to the developer. DGE also supports statistical functions and can import and export graphs in .PCX format. The package allows 260 points per data set as well as unlimited overlays and a mix of graph types.

The program comes with interfaces for Dbase III Plus, Dbase IV, Foxbase Plus, Clipper, Quicksilver, dBase, and Eagle, as well as standard C compilers.

DGE, which was developed by England-based Bits per Second, was announced at the recent Clipper Developer's Conference sponsored by Nantucket Corp. (See "Add-Ons, Enhancements Dominate Clipper Show," June 13, 1988.)

The \$195 product supports CGA, EGA, VGA, and Hercules display adapters and runs on PS/2 and PC compatibles with DOS 2.0 or later or OS/2 in real mode. It also works with Microsoft Windows 2.0 and 2.03. DGE supports Epson-compatible dot-matrix printers, Hewlett-Packard-compatible laser printers, and HP-GL-compatible plotters.

Pinnacle Publishing Inc., P.O. Box 1693, Tacoma, WA 98401-1693; (800) 231-1293, (206) 383-4396.



The color graphing functions in Pinnacle's DGE support a wide variety of chart formats, including bar, pie, Cartesian graphs, and time series.

News Briefs

Continued From Page 19

Memory organization control options allow the programmer to minimize the amount of data that needs to be loaded into RAM when the program is started. In addition, the package supports Intel-style source-level debugging records.

The package will run on IBM PCs, PS/2s, and compatibles with at least 512K of RAM and DOS 2.1 or later.

C86 Plus costs \$497.
Computer Innovations Inc., 980 Shrewsbury Ave., Tinton Falls, NJ 07724; (201) 542-5920.

ASCI Ships Turbo Programmer For Microsoft C, Borland Turbo C

Promising to cut the time needed to create complete databases, ASCII has begun shipping Turbo Programmer for Microsoft C and Borland Turbo C.

The CASE tool automatically generates C code from user-drawn database screens, making assumptions about field attributes and wiring them to a user-modifiable "control file." These assumptions govern the operation of a "main engine" of C source code that is the heart of the package.

Each file can have 21 million records and up to 15 keys per index, with as many as nine fields per key. All keys are stored in a single LAN-compatible file.

The package works with Microsoft C (Versions 5.0 and 5.1), Quick C (Version 1.0), and Turbo C (Versions 1.5 and 2.0). A future version will support Lattice C, according to a company spokesperson.

Turbo Programmer for C costs \$549 but is discounted to \$499 through 1988.

ASCII, 3239 Mill Run, Raleigh, NC 26712-4135; (800) 227-7681, (919) 782-7703 in NC.

Unix-Compatible Make Facility From Luguru Now Supports OS/2

Luguru Make, a Unix-compatible make facility that now supports OS/2 as well as DOS, is shipping from Luguru Software.

The product includes executable files for both DOS and OS/2 and helps developers automate compiling and linking of programs. Its syntax is compatible with the standard Unix make facility, which simplifies porting Unix code to DOS or OS/2 systems, said Todd Doucet, Luguru Software's co-owner.

Unlike other make utilities, Luguru Make detects errors returned by programs executing within batch files. Even if an error is detected while compiling one module, the program still compiles unaffected modules, according to the developer.

Luguru Make costs \$69, with \$25 updates from the DOS-only version.

Luguru Software Ltd., 5843 Forbes Ave., Pittsburgh, PA 15217; (412) 421-5911.

Firm Adds Interfaces, Thesaurus, Spelling Checker to PC-Outline

Brown Bag Software has updated PC-Outline to include an integrated spelling checker and thesaurus and a variety of interfaces.

The renamed PC-Outline Plus, Version 4.0 includes new user-definable interfaces that accept editing commands used in Microsoft Word, Wordstar Professional, Multimate, and Word Perfect, as well as PC-Outline commands.

The update costs \$195 plus \$7.50 for shipping. Current users may upgrade for

\$50 plus \$7.50 for shipping, or free to those who acquired the product after July 23.

Brown Bag Software, 2155 S. Bascom Ave., Suite 114, Campbell, CA 95008; (405) 523-0764.

Lotus Offers Fontware Installation Kit Free to Manuscript 2.0 Users

Lotus Development Corp. will offer Bitstream's \$95 Fontware Installation Kit for Lotus Manuscript free to all registered owners of Manuscript 2.0.

The kit offers features to generate downloadable fonts in a variety of point sizes from the Bitstream Fontware Type-face package. The installation kit also includes the Swiss family of typefaces.

Manuscript supports the Bitstream font installation process with menu-

driven commands and supports most laser and Postscript-compatible printers.

A coupon for the Bitstream product is being bundled in Manuscript 2.0 packages. Current users can obtain the Fontware Installation Kit directly from Lotus, and Manuscript 1.0 users can get a coupon by updating to Version 2.0 for \$75, Lotus said.

Lotus Development Corp., 55 Cambridge Parkway, Cambridge, MA 02142; (800) 345-1043.

Ashton-Tate Releases Free Utility, Updates Draw Applause Program

Ashton-Tate has updated its graphics program Draw Applause and released a free utility that imports files from other Ashton-Tate graphics products.

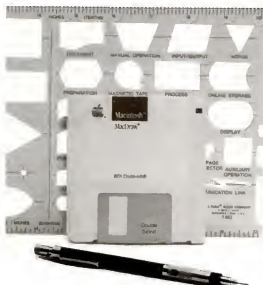
Draw Applause, Version 1.1 requires

less memory, provides a configuration manager for easier installation, and supports the Hewlett-Packard Paintjet printer and Logitech mice.

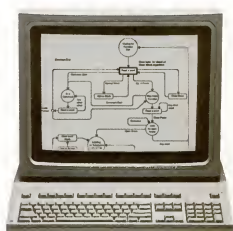
The product provides development features for a range of business graphics, free-form drawing, and a clip art library. It still costs \$495, and current users may upgrade free from Ashton-Tate.

The new CGM Link utility is also available free from Ashton-Tate to registered users of Chart-Master 6.21, Sign-Master 5.11, Diagram-Master 5.02, and the Presentation Pack 1.0 graphics products. The utility allows export of graphic images from those products to Draw Applause for editing with its drawing tools or to other graphics applications that accept Computer Graphic Metafiles. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502; (213) 926-1112.

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Info 9/12

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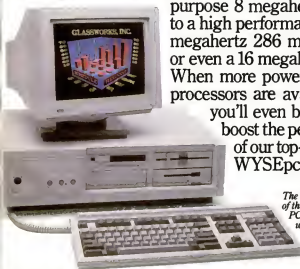
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News Briefs

Conographic Cuts Price of Conodisk 6000 Update

Conographic Corp. has upgraded its Conodisk 6000 printer controller package for Canon-based laser printers and lowered the price, the company said recently.

Effective immediately, the \$2,695 package comes with a controller board for AT compatibles, a video interface for Canon and HP Series II laser printers, 35 fonts that are with compatible with the Apple Laserwriter Plus. Conographic's proprietary Postscript interpreter, and drivers for Ventura Publisher, Pagemaker, and Microsoft Windows.

The Conodisk 6000 controller board previously sold for \$2,895 with 13 fonts. The additional 22 fonts and the new interface were available separately.

The upgraded controller now prints Postscript images about 10 percent faster than the first release, said Robert Wong, the product's marketing manager. The Conodisk 6000 prints Postscript files more than 3½ times faster than the Apple Laserwriter, he said.

Conographic Corp., 16802 Aston, Irvine, CA 92714; (714) 474-1188.

Cost of Heritage Product Line Reduced by 10%

Computer Components Corp. said new purchasing agreements with its suppliers have allowed it to lower the prices of its Heritage line of IBM PC-compatible personal computers and some peripherals by an average of 10 percent, or about \$300 a system.

The company said the price reductions apply to the Heritage 286/10, Heritage 286/12, Heritage 386/16, and Heritage 386/20 computer systems.

The decreases vary according to the type of disk drive, adapter card, and monitor. The suggested price of the 286/10, with a monochrome monitor, adapter card, and 71-megabyte hard drive, dropped 18 percent to \$1,819 from \$2,219, according to Computer Components.

Prices for local depot service, available at 46 service depots in major U.S. cities, remain at \$25 per year, the company said.

On-site service begins at \$100 per year.

Computer Components Corp., 2700 Gateway Center, Morrisville, NC 27560; (919) 469-9301.

TECHNOLOGY UPDATE

High-Capacity Floppies Are Drives of the Future

Experts See 100MB Capacity

By Mark Brownstein

Floppy disk drives with the capability of storing up to 100 megabytes of data on a single 3½-inch floppy disk should become available within a few years, industry experts predict.

Floppy drives with a capacity of up to 25 megabytes have been announced for shipment early next year, with a 12½-megabyte drive already being sold in Japan markets.

LARGE POTENTIAL MARKET. When such drives actually become commercially available, there could be a large potential market for them, said Jim Porter, an analyst at Disk/Trends Inc., in Mountain View, California. The market size for the high-capacity floppy disks and drives "could be in the millions of units," Porter said.

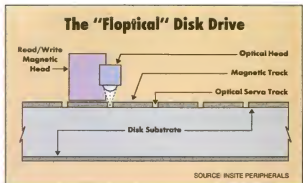
"When you look at the number of small Winchester [drives],

you have to consider the backup requirement," Porter said. "The only available [hardware backup] option is cartridge tape drives, but those aren't regarded as ideal since tape cartridges can't be addressed as a logical disk."

Computer users and hardware developers would prefer a high-capacity floppy disk drive to a tape drive as a companion item to hard disks, Porter said. There are probably millions of computer buyers who don't realize they need a high-capacity floppy disk drive yet, he said.

"There are two different ways to get more information on a floppy," said Richard Weiss, laboratory manager at 3M's Diskette Laboratory.

INCREASING RECORDING DENSITY. The first method of increasing recording density is with increased linear recording densi-



To increase storage to 25 megabytes on a 3½-inch floppy disk, Insite Peripherals' "floptical" disk drive combines an optical servo positioning system with otherwise standard magnetic media.

ties, Weiss said. In essence, putting more data lengthwise along each inch of the concentric circles, called tracks.

A second method is increasing the number of recording tracks contained per inch, measured along the radius of the disk, Weiss said.

One approach to using increased linear densities is being explored by Brier Technology Inc., which recently announced a 3½-inch floppy disk drive system that will provide 25 megabytes of unformatted, or 21.4 megabytes of formatted, data on a single disk, a Brier representative said.

ZONE RECORDING. The increased linear densities are accomplished using a technique called zone recording. The theory behind zone recording is fairly simple, but the technique requires somewhat sophisticated electronics.

A floppy disk is divided into tracks and sectors. Recording tracks are a series of concentric rings, going from the center of the disk to the outer edge of the

media. Each track is divided into sectors.

A disk that is divided into sectors looks much like a pie cut into slices. When the tracks are added to the sector information, the disk ends up with many logically defined arcs, each of which contains data.

Each sector holds the same amount of data, but sectors near the outer edge of the disk are physically larger because the circumference of the track is larger. Assuming the disk media have the same sensitivity across their entire surface, then the outer sectors are being underused. That is, they can hold significantly more data than the controller places onto them.

MAKING THE MOST OF A RECORDING AREA. Zone recording takes advantage of the extra recording area available at the outer edges of the disk by defining recording zones for the data to be recorded onto.

For example, at the center of a disk platter, the disk may be divided into nine zones, with

See Floppies, Page 30

Calera Introduces Cards For Scanner Recognition

By Tom Moran

Two scanner-recognition cards designed to bring high-level OCR functions to the PC level will be introduced today by Calera Recognition Systems Inc. The company, formerly known as The Palantir Corp., said the Truescan boards go beyond OCR or ICR to provide complete "document recognition" capabilities, including automatic decoupling and the recognition and preservation of tables, lists, and other formats within documents.

Compatible with scanners from Desat, Canon, AST, Datacopy, HP, IBM, Microtec, Panasonic, Princeton Graphics, and others, the Truescan boards can also output a variety of text and graphics formats, according to Steve Dow, president of Calera.

Supported word processing formats include versions of Microsoft Word, Multimate, Volkswriter, Word Perfect, Wordstar, Xywrite, and other applications. The boards can produce output in

Pagemaker (PCX), PC Paintbrush, PDA, Ventura (PCX), and several TIFF formats.

"We are offering basically the same OCR quality [as high-end products]. The difference is that our high-end products are for high-volume environments," said Dow. The two boards are the Truescan Model S, which will retail for \$2,495, and the Truescan Model E, which will list for \$3,495. The Truescan Model E runs at higher speeds and supports the rotation of pages, including faced pages.

Calera Recognition Systems Inc., 2500 Augustine Drive, Santa Clara, CA 95054; (408) 986-8006.



Calera Recognition Systems' Truescan boards offer "document recognition" capabilities.

LSI Unveils Chip Set Series Built Around SPARC, MIPS

By Tom Moran and Martin Marshall

A series of four RISC chip sets was introduced recently by LSI Logic Corp. of Milpitas, California.

The chip sets are built around both the SPARC microprocessor originated by Sun Microsystems and the MIPS microprocessor designed by MIPS Computer Systems Inc. LSI Logic also announced the formation of a separate microprocessor products group, to be headed by vice president Brian Halla, formerly an Intel marketing director.

LSI Logic said its chip sets will set new standards for price/performance, with an average cost of \$10 per MIPS for a microprocessor. However, to run the microprocessors effectively will cost considerably more after the addition of support chips. For example, an 8-

MIPS version of the MIPS RISC chip, the LR2000, in quantities of 10,000 will sell for \$79 but will also require a \$125 floating-point unit (FPU2010) and four write buffers at \$15 each. The Model 64801 SPARC chip that is plug compatible with Fujitsu's SPARC chip and provides 12 MIPS will cost \$119 in quantity. A 15-MIPS version will cost \$149. The designer will then have to add \$345 for the floating-point controller and \$245 for the memory management unit.

A SPARC chip that is compatible with the 20-MIPS Cypress SPARC chip was also introduced. The L64811 will sell in quantity for \$199. Delivery is slated for early 1989.

LSI Logic Corp., 1551 McCarthy Blvd., Milpitas, CA 95035; (408) 433-4067.

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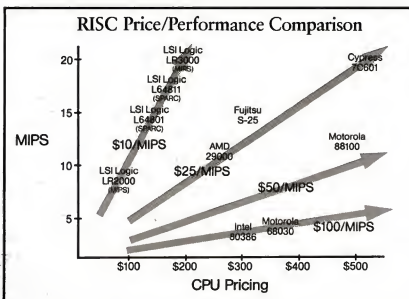


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L64801A Fujitsu compatible	15 MIPS	\$149
L64811 Cypress compatible	20 MIPS	\$199

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LSI LOGIC

Floppies

Continued From Page 27

each zone corresponding to a sector. At the outer edges of the disk, a track may have 20 or more zones, with each zone recording the same amount of data as any other zone, according to Brier Technology.

Zone recording requires more sophisticated controllers because sectoring is simpler to implement. Thus, zone recording will probably always be more expensive than simple sector recording, Porter said.

SERVO TRACKS. A second method employed by all current manufacturers of high-capacity floppy disks is the use of

servo tracks. The basic principle behind servoing is that the more precisely the drive's head can be positioned, the more positions on the disk that can be reliably written to and read from.

The comparison between 5¼-inch floppy disks and 3½-inch floppy disks demonstrates this relationship. In a 5¼-inch floppy drive, the disk is likely to wobble slightly out of round, resulting in less precise positioning of the drive head onto the disk platter. A 3½-inch drive uses media that are precisely locked into a metal hub, thus simplifying more accurate positioning of the read/write head.

A servo approach places a location signal onto the floppy disk media. A special pickup mounted on, or near, the drive's head follows this precise servo track. Because the head can be posi-

tioned precisely in relation to a specific servo track, finer track widths and higher recording densities are achieved.

Using standard 3½-inch floppy disk media, Brier Technology Inc. and Insite Peripherals have placed servo tracks on the media, allowing storage capacities of 21.4 megabytes of formatted data.

In addition, Imega has been shipping the Bernoulli Box, a removable high-capacity storage system, for many years. The Bernoulli Box also uses a positioning servo track on the disk.

The typical approach to placing a servo signal onto a disk is to simply record a magnetic servo track. The drive then follows the servo track and precisely positions the head on the disk. If the head strays from the servo track, a feedback signal lets the controller reposition the head.

OPTICAL SERVO TRACKS. A new approach that promises to result in lower-priced and more reliable high-capacity floppies has been announced by Insite. The Insite approach adds an optical, rather than a magnetic servo, to the surface of a magnetic disk, said Jim Abkisson, Insite's president.

An optical servo track, which alters the reflectivity of the disk surface to allow the drive's optical system to detect it, overcomes problems with magnetic servo tracks, Abkisson said.

CORRECTING FOR A DEFECT. "The optical servo doesn't care about defects [in the magnetic media]," Abkisson said. "If we find a defect, we just map around it. With a magnetic servo, you can't correct for a defect in the magnetic servo signal."

Abkisson believes that Insite's approach will result in lower production costs, for both the drives and media, than is possible with purely magnetic servo and zone-recording approaches.

"There is a world of difference in terms of cost [between the optical servo and magnetic servos and zone recording]," Abkisson said.

High-capacity 5¼-inch floppy drives have been available for some time, with Imega's Bernoulli Box a leader in the market for this size of media, and Konica now also selling a higher capacity (10.7-megabyte formatted) system. However, "the future of PCs will be 3½-inch media," said Disk/Trends' Porter.

While current technologies will allow 3½-inch disks to read and write 25 megabytes of unformatted data, or 21.4 megabytes when formatted, improvements already made in media could conceivably quadruple those capacities quite rapidly.

Standard floppy disk media have the capability to handle 17,000 flux changes per inch (fpci), 3M's Weiss said. However, 3M said that the existing media can be "pushed to 75,000 fpci."

100-MEGABYTE FLOPPY TECHNOLOGY. Insite's Abkisson agrees with Weiss' projections. Recording technologies that use maximum track densities haven't been implemented, he said. The 25-megabyte disk uses media with 16,000 fpci, Abkisson said, pointing out that new materials are available with up to 60,000 fpci. "I believe we'll drive [high-capacity] floppy technology into the 100-megabyte class of product within two years," he predicted.

OBSTACLES TO GLOBAL ACCEPTANCE. There are still some fairly significant obstacles in the way of global acceptance of high-capacity floppy disks. One of the major obstacles is cost.

"There is a resistance [by the end-user] to pay a higher price for a 20-megabyte floppy disk than for a 20-megabyte Winchester drive," said David Claridge, a disk drive analyst at Hambrecht & Quist, in San Francisco. The same type of resistance to high-capacity floppy drives is expected.

"A [high-capacity] floppy drive can't cost more than the drive it's replacing," Porter said. "The common wisdom is that a replacement disk device can't cost more than a [retailing] tape drive. If it costs the same as a tape drive, the extra functionality available will be very attractive to systems manufacturers and end-users and will tend to capture the market for [high-capacity floppy] disks."

Although pricing is a factor, Hambrecht & Quist's Claridge expects systems manufacturers to be paying about \$150 for the drives within 12 to 18 months.

See Floppies, Page 32

Less is More with ZeroNet

Introducing a 2nd Generation, zero-slot, user-friendly, peer-to-peer, NETBIOS and multi-user software compatible, ten PC LAN for only \$299 per PC complete.

LESS Memory (RAM) used (70K)=MORE Functionality. Multi-user 2-NETBIOS.

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Peer-to-Peer Network Architecture Versus File-Server Network Architecture: the other zero-slot LAN solutions and most board-based LAN systems use file-server architecture which limits the shared use of data storage, printing and peripherals to those controlled by a "server" machine and denies access to every other PC to the resources on the "slave" PCs or terminals. Server architecture was developed in the mainframe era when dumb terminals were the slaves using the mainframe's processing power, mass storage and peripherals. Peer-to-peer architecture uses every PC as a server and gives every network user access to peripheral and storage devices as if they were attached to their own PC. Thus a peer-to-peer design makes optimal use of available resources for all users.

ZeroNet Advanced Features:

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- Compatible:** runs 99% of MS DOS software. Networks, PCs, XT's, AT's, 386's, PS/2's and laptops. In multi-user mode requires DOS 3.1 or higher. Complete NETBIOS module included.
- Data Security:** automatic record and file locking options once selected, protect data from corruption. Also users can be restricted from access to printers or reading from or writing to designated storage devices.
- User Friendly:** using standard DOS commands network users have direct access to files and programs on remote PCs. Background operation permits all network functions without users leaving applications or switching programs.
- Most Single-User Software May Be Used in a Multi-User Mode:** ZeroNet file locking function provides data security for shared single-user applications.
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User Report

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Mechanical Enterprises Inc. is shipping a keyboard that rearranges the keys on standard keyboards into a smaller package designed for use in CAD, sales, and other applications where desk space is at a premium.

The Microtype Space-Saver keyboard is designed as a direct replacement for the popular 101-key extended keyboards available for PC compatibles, said company spokeswoman Maileia Twyford. The Microtype fits 100 keys, including 12 function keys and a separate cursor set, into a 10½-by-6-inch layout that takes up only 60 percent as much space as the 101-key design, she added.

MEI saved space by moving the cursor and numeric pads and the function keys above the alphanumeric key set, compressing key rows, and removing borders. The resulting design saves space and



The Microtype Space-Saver takes up less space than extended keyboards.

reduces head and hand movements.

The Microtype is manufactured using sealed contact switches with full-travel stems. It sells for \$150, with volume discounts available, and is available now.

Mechanical Enterprises Inc., 461 Carlisle Drive, Herndon, VA 22070; (703) 435-9496.

— Bob Ponting

QMS Offers TIPS Driver for Colorgrafix Thermal Printers

Users of Truevision Image Processing Software (TIPS) can now print color transparencies and proofs on the QMS Colorgrafix line of thermal printers with a DOS driver provided free by QMS.

TIPS is a high-end image processing package that lets users create color images with up to 32 bits per pixel using the Targa and AT-Vista graphics adapters, also from Truevision Inc.

The QMS printer driver lets users adjust the RGB color values at print time, so the printer output matches the colors on the video display. The driver also uses a special dithering technique to

smooth the TIPS image when it is printed at 300 dots per inch on Colorgrafix printers.

The QMS TIPS driver takes up 12K of RAM and is activated through the TIPS icon-based menu system. The driver works on any AT-compatible system that runs TIPS.

Current owners of the Colorgrafix line of thermal printers can obtain the driver free from QMS.

QMS Inc., Colorgrafix Product Manager, 1 Magnum Pass, Mobile, AL 36618; (205) 633-4300.

— Bob Ponting

Floppies

Continued From Page 30

Abkisson sees incompatibility with the present 3½-inch standards as another obstacle to replacing existing 3½-inch drives. "We have to [provide] downward compatibility with the standard (720K) floppy. Solutions are at hand."

However, Abkisson acknowledged that compatibility with the current floppy disk densities is not an initial priority.

A third obstacle is gaining acceptance of the format by one or more large manufacturers. "If IBM says 'we're going to go that way,' this will create a standard," Porter said.

COMPANIONS TO HARD DISK DRIVES. Finally, the question of how the drive will be used must be addressed. The high-capacity floppy disk drive "won't be a replacement for the Winchester," Claridge said. Instead, the new drives will be used as companions to hard disk drives.

"You will use the Winchester to keep software that you use all the time, and you will use the floppy drive for distributing new software and backup," Claridge said.

A second market for the high-capacity floppies will be portable computers. Hard disk drives used in laptop computers have typically been somewhat large and used significant amounts of power because the platters have to be kept in constant rotation. Replacement with smaller high-capacity floppy disks that use less power may be an alternative.

With American companies pushing 25-megabyte 3½-inch drives and a variety of 5¼-inch high-capacity drives, and with Japanese developers working on 12.5-megabyte 3½-inch and 4-megabyte 3½-inch drives, there is a degree of fragmentation in the high-capacity floppy drive market.

However, the technology is in place now to produce high-capacity floppy drives. Cost-reducing technology is being developed both here and in Japan. The industry awaits a decision by a major manufacturer to adopt a particular format for future machines that will use the high-capacity drives.



ATI Adds the 1270 And 1275 to Line of Laser Printers

Advanced Technologies International (ATI) has added two 12-page-per-minute models to its laser printer line.

The ATI 1270 and 1275 are 300-dpi printers that have a manual paper feed and single 250-sheet paper tray, said John Goetz, marketing manager at ATI. The printers accept two additional paper trays and an envelope feeder, and will print on letter-, legal-, or statement-size paper. Both use a Toshiba printing engine and have receptacles for three ATI or Toshiba font cartridges, Goetz said.

The ATI 1270, a desktop printer that emulates the Diablo 630, Epson FX80, and HP LaserJet Plus, has a controller based on the Motorola 68000 processor, and comes with 512K of RAM expandable to 2 megabytes. The printer has two serial ports and one Centronics-compatible parallel interface. It sells for \$3,995.

The ATI 1275, an Adobe-licensed Postscript printer, can output Postscript text at 12 pages per minute, although graphics throughput is slower, Goetz said. The 68020-based controller comes with 4 megabytes of RAM. The printer has one serial port, one Centronics-compatible printer port, and an AppleTalk interface. It sells for \$8,595.

Advanced Technologies International, 355 Sinclair-Frontage Road, Milpitas, CA 95035; (408) 942-1780.

— Bob Ponting

Kyocera Adds Built-In Fonts To Its Desktop Laser Printer

Kyocera Union recently upgraded the ROM in its desktop laser printer to include 43 built-in fonts.

The new ROM chip set expands font options to a total of 79 fonts for the dual-bin 10-page-per-minute F-2010 Compact Laser Printer.

The new font types add Bold and Italic faces printable in portrait and landscape modes to the printer's original Courier, Helvetica, Letter Gothic, Prestige Elite, and Times Roman fonts.

The printer includes the Prescribe page description language. It comes standard with serial and parallel ports and

two slots for ROM cards that can be used to download forms, logos, signatures, and other custom images, the company said.

The F-2010 emulates escape codes and other command sets and is compatible with the Hewlett-Packard LaserJet, Diablo 630, Epson FX-80, IBM Graphics Printer, NEC Spinwriter, and Qume Sprint II, according to the company.

Prices for upgraded chip sets with installation from authorized dealers begin at \$150. F-2010 printers shipped after September will use the new ROM and continue to sell for \$4,695.

Kyocera Union Inc., 3165 Adeline St., Berkeley, CA 94703; (415) 848-6680.

— Paula S. Stone



Kyocera Union has added 43 fonts to its F-2010 Compact Laser Printer.

You need a noisy, old-fashioned printer like you need a hole in the head.

Canon non-impact printers give you real peace of mind, with quick, quiet, high-quality printouts.

Tap, Tap, Tap. Your old printer is slowly banging out an eight-page report. And driving you mad with the racket. Do the same report on Canon's new BJ-130 Bubble Jet Printer and at 45 dBA you'd hardly know the machine is working. Plus, the job would probably be done by now. Plus, it would look beautiful, with high resolution up to 360 dpi.

The BJ-130 has a built-in automatic sheet feeder and takes almost any kind of paper. And its wide 136-character carriage is perfect for spreadsheets.

Tap, Tap, Tap. Or, consider the Canon Ink Jet.

The PJ-1080A delivers stunning high-resolution graphics in seven vivid colors.

Tap, Tap, Tap. And then there's Canon's Laser Beam Printers. Print-shop quality, supported by software for word processing, database, desktop publishing, graphics, spreadsheets, CAD/CAM—you name it. And the LBP-8II and LBP-8IIT offer easy maintenance and dream-come-true paper handling. The LBP-8IIT even has dual paper cassettes! All this from Canon, the company that pioneered non-impact printing. What can your old printer say to that? *Tap, Tap, Tap.*

For more information on Canon's full line of non-impact printers, call 1-800-453-3307. (In Utah 1-800-622-2500.)

Canon
PRINTERS
Printouts that stand out.



Motorola and PCPI Jointly Developing, Marketing ASICs

By Bob Ponting

Motorola Inc. and Personal Computer Products Inc. are jointly developing and marketing two new application-specific integrated circuits (ASICs) designed to lower the cost and increase the speed of laser printer controllers, the companies said recently.

Both ASICs are designed to work with printer controllers built around Motorola 68000 and 68020 microprocessors, according to Dale Dewoskin, an engineering manager at PCPI. The products consolidate the functions of more than 50 different chips, lowering manufacturing costs and freeing up space on controller boards for more memory, he said.

Motorola will manufacture the joint ASIC designs using high-density CMOS semicustom circuit technology. PCPI, which is based in San Diego, will contribute driver software for the chips.

The LPC-1 is designed to reduce controller-chip counts and work with processors and memory chips of varying speeds, Dewoskin said. PCPI plans to use the LPC-1 in its own laser printer products. It will also market the chip and printer emulation software that uses the chip to other controller developers. Samples are currently available, with full production scheduled for November, according to Eric Gaer, director of marketing at PCPI.

The ALPC-1 has all the functionality of the LPC-1 and additional hardware to assist raster operations. It is designed to give 68000-based printers performance that is equivalent to that of printers based on the 68020, Gaer said. Prototypes will be available at fall Comdex, with full production expected by February 1989, Gaer said.

News Briefs

Claris to Bundle Mail Merge With Mac Write

Claris Corp. will bundle a mail merge utility with every copy of Mac Write 5.0 sold from September 6 to December 31, the company said.

Claris plans to include the Merge Write program from Software Discoveries Inc. of South Windsor, Connecticut.

"Mail merge is the most often requested feature from our Mac Write 5.0 customers in small businesses," said John Zeisler, vice president of marketing at Claris.

Merge Write lets users create personalized form letters from data files created with Mac Write or other Mac databases, including Claris' Filemaker II.

Claris Corp., 440 Clyde Ave., Mountain View, CA 94043; (415) 960-1500.

Pictor Graphics to Ship 2-D Drafting Package

Pictor Graphics plans to ship Pictor Draft, a two-dimensional computer-aided drafting package, on October 15, the company said.

Pictor Draft is vector-based with multiple drawing "sheets"; multiple drawing windows on each sheet; precision floating-point accuracy; support for construction lines and circles; and PowerCalc, a calculator for equations, compass bearings, and math functions.

Pictor Graphics, 800 E. Campbell Road, Suite 199, Richardson, TX 75081; (214) 437-9043.

Cognition Enhances Mac Expert System Tool

Cognition Technology recently announced Mac Smarts Professional, an advanced version of its Mac Smarts expert system tool for the Macintosh.

The new version adds computational functions and direct access to database records in Syk and text formats. Support has been added for full-screen displays and color.

Also announced was HyperSmarts, a Hypercard stack version and subset of Mac Smarts that allows non-programmers to convert Hypercard stacks into expert systems.

Mac Smarts Professional costs \$495. HyperSmarts costs \$99.95.

Cognition Technology Corp., 55 Wheeler St., Cambridge, MA 02138; (800) 622-2829, (617) 492-0246.

Mac Support Is Added To Document Converter

By Scott Mace

Interpreter Inc. said last week that it has added Macintosh support to its Interpreter Kid bidirectional document conversion system.

The conversion system allows any Macintosh running Word Perfect or Microsoft Word to exchange documents with 27 different brands of computer equipment and PC-based word processing software, including Wang, Xerox, NBI, CPT, DEC VAX, Wordstar, Mac II, and Word Perfect.

The system converts the original document's format codes into the format of the target system with one keystroke, officials said. Transmission and conversion take place simulta-

neously, said product marketing manager Jeannette Nicholl. Tabs, centering, footers and headers, and other formats are precisely duplicated, eliminating the need for time-consuming cleanup and editing, the company said. Transmission speed is limited only by modem or transmission cable speed.

The base price of \$7,500 includes one bidirectional software pairing, all cables and hardware, and toll-free technical support. The price of the program is \$4,995 to government agencies buying off the GSA schedule, the company said.

Interpreter Inc., 11455 W. 48th Ave., Wheat Ridge, CO 80033; (303) 431-8991.

Bibliographic Database For Macs Is Announced

By Scott Mace

Park Row Software has announced Publish or Perish 3.0, a bibliographic database program for the Macintosh.

Publish or Perish uses a note card metaphor to display bibliographic information using the Macintosh user interface. Users can browse through the cards using the Mac's scroll bar.

The program lets users create an unlimited number of reference sets with up to 500 cards and notes in each set. Fields can contain up to 240 characters, with notes of unlimited length, according to the company.

Users can save all data as text files and can edit data using any word processor. Publish or Perish features include automatic alphabetization and punctuation, and users can merge different databases together or create subsets.

References that match a specified keyword or text string can be selected and saved as separate sets, according to Park Row Software.

Publish or Perish is intended for college students, professors, scientists, and technical professionals who want to manage their own bibliographies, the company said.

The program is intended to compete with higher priced, more powerful programs such as Personal Bibliographic Software's Pro-Cite (See "Mac Software Takes the Bibliography," August 5).

Publish or Perish is priced at \$49.95, and an IBM PC version of the program is available for \$39.95.

Park Row Software, 4640 Jewell St., Suite 101, San Diego, CA 92109; (619) 581-6778.

Microspeed to Ship Trackball Pointing Device for Mac Users

A trackball pointing device for Macintosh users who don't like using a mouse will begin shipping the first week of October from Microspeed Inc.

The Macrac is designed for the Mac 512KE, Mac Plus, and Lisa computers, and for Apple II systems with mouse cards. A version for the Mac II, Mac SE, and Apple IIGs with the ADB interface is in development, with shipment expected later this year, the company said.

The Macrac features three buttons mounted above the ball, with the outer buttons perform-

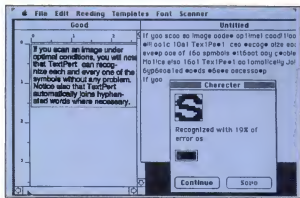
ing the same functions as the single button on the Macintosh Mouse. A center button supports drag operations.

The Macrac requires less desk space than a mouse since it doesn't have to be moved to change the pointer position.

No additional software or device drivers are required to use the Macrac. The Macrac will cost \$99.

Microspeed Inc., 5307 Randall Place, Fremont, CA 94538; (415) 490-1403, (800) 232-7888 outside CA.

— Mark Brownstein



CTIA's Textpert allows the user to teach the program to recognize characters and idiosyncratic elements within a document.

Spanish Firm to Market OCR for Apple Scanner 99.5 Percent Accuracy Claimed

By Laurie Flynn

A Spanish corporation will enter the U.S. market this week with optical character recognition (OCR) software for the Apple Scanner that uses a combination of expert system techniques to gain an estimated accuracy level of 99.5 percent.

The program, called Textpert, uses matrix recognition, topological, and feature-based technologies to achieve the high recognition rate, according to the company, CTIA of Barcelona, Spain. With the program's teaching mode, the user can teach the software to recognize a document's idiosyncracies. The program is capable of reading any Macintosh font and typeface and any Indo-European language and can distinguish between numbers and text, said Gwendolyn Tinius, CTIA's international product manager.

Textpert is capable of reading about 1,500 characters per minute and takes one to two minutes for a full-page typewritten document, according to Tinius. It includes drivers for the Apple Scanner as well as for Mac-compatible scanners from Microtek, Abaton, AGFA, and Hewlett-Packard, said Tinius.

Textpert is available for \$995 and runs with 1 megabyte of memory. The program has been on the market in Europe under the name Textscan for more than a year for use with Mac-compatible scanners, Tinius said. The program will be announced this week at the Seybold Desktop Publishing Expo, in Santa Clara, California.

CTA Inc., c/o Trans-National Trade Development Corp., 866 Second Ave., New York, NY 10017; (212) 759-6201.

Foxbase Plus/Mac Upgrade In Testing; Set to Ship Mid-Month

By Nick Arnett

Fox Software Inc. has begun customer testing of Foxbase Plus/Mac, Version 1.1, which adds a form generator, application generator, and template language to the Mac database.

Foxbase Plus/Mac can use application code and data files compatible with Ashton-Tate's dBase database application for IBM and compatible personal computers. The new version makes it possible to create data input and editing screens without programming by drawing the screen layout. The form generator has object-oriented drawing tools as well as Macintosh interface features such as scrollable text boxes, text buttons, radio buttons, check boxes, and pop-up fields.

The applications generator

uses templates to create complete applications automatically. It also uses tables generated by the forms generator.

Version 1.1 includes more than 50 enhancements to the programming language, the company said. Filtered indexes speed access to database subsets, scrollable lists display the contents of arrays, and various programming constructs have been made more flexible.

Version 1.1 is scheduled to ship in mid-September. It will be free to registered users of Version 1.0, the company reported. The original suggested retail price of \$395 remains unchanged.

Fox Software Inc., 118 S. Boundary, Perrysburg, OH 43051; (419) 874-0162.

**Which of these
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- ☐ **Paradox®**
- ☐ **DataEase®**
- ☐ **PC/Focus®**
- ☐ **R:base®**

News Briefs

Major Unix Execs Will Face Users' Questions

Unix users will have a rare chance to query major Unix executives in person in New York on September 14.

Senior representatives of AT&T, OSF, IBM, DEC, HP, Unisys, Sun, POSIX, X/Open, and the federal government will field questions on evolving Unix standards at a meeting hosted by the Unigroup of Greater New York, at 6 p.m., in the Schimmel Center at Pace University. This meeting promises a realistic appraisal of how — and whether — unified Unix standards can evolve, according to panel chairwoman Wendy Rausch-Hindin.

For information, contact: Wendy Rausch-Hindin (516) 667-7241, or David Oh (914) 666-0698.

Version of Word Perfect For SCO Xenix is Shipping

A version of Word Perfect 4.2 designed to take advantage of the demand page mode of the 80386 running under SCO Xenix System V/386, Release 2.2.2 or later is now shipping.

The SCO Xenix versions have identical functionality to the DOS version of Word Perfect 4.2, and also support a wide range of terminals and printers. They include up to 24 snaking or parallel on-screen columns, a table of authorities, and line numbering.

The product is priced at \$995.

Word Perfect Corp., 1555 N. Technology Way, Orem, UT 84057; (801) 227-4069.

Musica/386 Plus Now Supports Up to 12 Users

An enhanced version of Musica/386, the multiuser DOS system from Bristol Information Systems, is now available.

Called Musica/386 Plus, it can support up to 12 users. The operating environment allows users to share common databases, printing resources, networked applications, and perform multi-tasking. It is priced at \$586.

At the same time, Bristol announced Musica/Term, a terminal emulation utility that allows PCs to be used as terminals on the Musica/386 and Musica/386 Plus networks. Musica/Term is priced at \$49.

Bristol Information Systems Inc., 84 N. Main St., Fall River, MA 02720; (508) 679-1051.

Software Links DOS PCs To Unix UUCP Networks

By Martin Marshall

The advanced communications features of Unix UUCP networks are now available to DOS-based PCs through the UU-Link software package from Vortex Technology.

The package turns any DOS-based system into a UUCP network node without the need for any special software at the Unix sites, the company said. It provides for unattended automated connections and file transfers and comprehensive E-Mail facilities. It includes connection to the international public UUCP/Usenet dial-up networks, Internet networks such as ARPA Net, CS Net, Bit Net, and private networks.

Both text and binary file transfers are supported, including the UUCP "l" address and the Internet "g" address for E-Mail addressing and handling, and for the capability to send and receive Usenet "newsgroups" articles. There is also a "cron" mechanism that can automatically schedule outgoing calls or

other program executions at specified dates and times.

UU-Link has a provision for separate mailboxes for multiple users on a single DOS system, as well as multiple types of address aliasing mechanisms, so that E-Mail can be sent to distribution lists and be used with user signature files. It also can provide automatic address resolution for Internet domain-style addresses.

Another feature of UU-Link allows for the filing of messages to and from user-defined mail folders, as well as the automatic generation of reply addresses for answering mail and the capability to forward messages to other recipients.

Its security features include remote access controls, logging of activities such as remote logins/logouts, and file transfer activity. The package is priced at \$335, and is available now. Vortex Technology Inc., P.O. Box 1323, Topanga, CA 90290-1323; (213) 390-3920.

Aeon Board Provides 10 MIPS of Unix Power

By Martin Marshall

Designed around National Semiconductor's 532 processor, an AT-bus-compatible coprocessor board from Aeon Technologies offers 10 Vax MIPS processing power to Unix operations, the company said.

The board, dubbed the 532/AT Desktop Mainframe, also lets the user run DOS and Unix simultaneously. It has 4 megabytes of RAM, expandable to 16 megabytes through the use of a daughterboard.

Designed for real-time and Unix applications, the 532/AT contains a copy of AT&T's Unix System, Version 3 kernel on-board. It comes with a binary user's license and a complete set of support documents and software, according to Aeon. The 532/AT is also optimized for multiprocessor systems with a loosely coupled MIMD (multiple-instruction, multiple-data) architecture. Up to four coprocessor boards can be used in the same system.

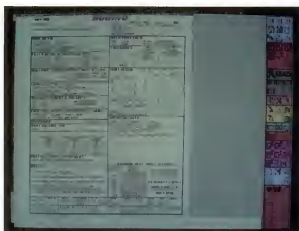
The need for interaction among multiple processors is minimized by the use of the host 80286 or 80386 processor as a file processor responsible for handling file I/O for all the 532/AT processors. This allows optimization of queued disk accesses without large amounts of interaction among the 532/ATs.

The 532/AT is configured to use EGA graphics, but support

software also includes Tektronix 4105 color and DEC VT100 terminal emulation, allowing the use of mainframe software packages without customization.

The price of the base unit, with a floating point processor, is \$9,980. This is about three times the price of National 32032-based products, but it also offers eight to 10 times the processing power, according to William Fraser, Aeon's CEO.

Aeon Technologies, 90 S. Wadsworth Blvd., Suite 105-481, Lakewood, CO; (303) 777-6142.



Cimline's ID, Release 1.3 has versions for creating new forms, for filling out the forms, and for viewing the forms.

Cimline Unveils Update For Its ID Unix Program SQL Gives Access to DBMSes

By Scott Mace

Cimline Inc. has announced an update of Intelligent Documentation (ID), a Unix-based program that gathers information from CAD drawings, DBMSes, word processing, and other sources and formats it uses for printing.

Optional interface drivers for Structured Query Language (SQL) systems gives Intelligent Documentation, Release 1.3 access to relational DBMSes from Oracle Corp., Sybase Corp., and Rhodius Inc. of Toronto, maker of the Empress DBMS.

ID handles manufacturing forms and documents by integrating text and graphics. Using computer networks, ID gathers and formats information in forms such as ASCII text, CAD drawings, IGES data, bit-mapped raster graphics, and now SQL relational database transactions. ID inserts this information into any designated area in a document, and can eliminate searching blueprint files, scanning microfiche, and manually checking databases in multiple computer systems.

Pricing is \$5,000 per driver for a network license.

With ID 1.3, Cimline has also repackaged ID into three editions corresponding to the three levels of use found among ID's 75 sites. The new editions of ID make it easier for engineers, technicians, and production workers to use ID by shielding them from network management and computer systems complexities, Cimline said.

The ID Administrator Edition, used to design ID's forms, sells for under \$20,000, including training. The ID Professional Edition, which provides automatic filling out of the forms, is priced at \$2,995 per workstation. The ID View Edition, for viewing documents created with the Professional Edition, is \$995 per workstation. Release 1.3 of ID is available on the Sun-3/60 and related workstations, as well as the new Sun 386i.

Cimline Inc., 700 Nicholas Blvd., Elk Grove Village, IL 60007; (800) 225-7943, (312) 228-7300.

Driver Supports X Window on DOS PCs

By Paula S. Stone

A new software driver that works with a high-resolution graphics controller to support X Window on a DOS-based PC has been announced by Control Systems.

The X Window driver and the Artist Designer 12 graphics controller board allow users of 80286- and 80386-based AT-based PCs to connect the DOS-based system into a network of Unix- or Xenix-based mini or mainframe computers.

This combination lets users

run either windowed or DOS applications without purchasing Xenix or repartitioning the hard disk. The Artist Designer 12 graphics controller offers 1,280-by-1,024-pixel resolution and displays 256 colors from a 16.7 million-color palette. This gives PC users resolutions approaching a workstation.

The Artist Designer 12 uses the TI 34010 graphics system processor that functions as the X Window server. The TI chip maintains full control and exe-

cution of all graphics functions without involving the host CPU. First shipped in July, the Artist Designer 12 works with 80286- and 80386-based AT-bus computers. At \$4,495, it includes the user's choice of software driver. The X Window driver will be shipped free with the controller when the driver is available in mid-September.

Control Systems Inc., 2675 Patton Road, St. Paul, MN 55113; (612) 631-7800, (800) 826-4281.

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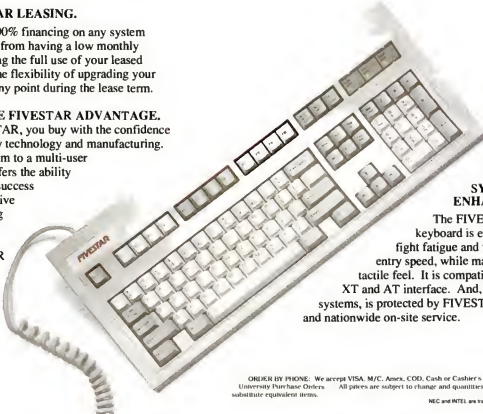
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News Briefs

Macropac Is Acquired By Individual Software

Individual Software Inc., a maker of training packages, has acquired Macropac International, publisher of 101 Macros for Lotus 1-2-3 and 101 Macros for Excel.

The deal enables Macropac, which has sold its products primarily via direct mail, to enter major distribution channels, according to James Schuyler, vice president of Individual Software. Schuyler said that although the company intends to cut Macropac's advertising volume, retail availability of its software will increase.

Macropac founder and president E. Michael Lunsford will become a vice president of Individual Software.

Appeals Court Upholds Bizcomp Patent Denial

The long-standing dispute over signaling technology in modems came to an apparent end recently when a U.S. Court of Appeals upheld an earlier ruling that denied Bizcomp patent protection for the "escape signal" scheme. U.S. Robotics had challenged Bizcomp's patent on the escape signal in 1984, saying the technology was a logical and obvious improvement on earlier modem technologies.

The ruling enables other modem manufacturers to employ the escape signal technique freely, without the threat of patent infringement or licensing fees looming.

Although the question of the patent has been resolved, U.S. Robotics plans to sue Bizcomp for damages.

Ash Join to Launch Mac Newsletter Next Month

Ash Join, former head of AST Research Inc.'s Apple products group and consultant to a variety of Mac product developers, plans to launch *The Macintosh Market Report* next month.

The \$185 newsletter will come out 10 times per year and will offer an overview of the market for Mac products. Regular features will include hardware and software product category reviews, vendor profiles, and analysis of advertising in Mac-oriented publications. Join said.

The first issue, scheduled for October 15, will discuss fax modems, word processing software, profile Silicon Beach Software Inc., and analyze Mac advertising for the first half of 1988.

COMPANY PROFILE

Growing Pains Mingled With Gains Inch Dell Toward Its Goal

Firm Dismisses Outside Criticism as Envy

By Paula S. Stone

Dell Computer Corp. has made significant strides in realizing its goal of becoming a leading computer vendor, but the growth hasn't been painless.

In recent weeks, the company has acknowledged a series of product problems, cancellations, and delays. Of the five products Dell announced in April, only two have been brought to market. The two Micro Channel Architecture clones, which were supposed to ship in the fourth quarter, have been postponed until next year.

The 8088-based System 100, cancelled last month, is the latest casualty. The company dropped the System 100 because it could not get FCC approval or sell the machine at a competitive price, said sources close to the company.

In addition, personnel changes made throughout the year point to continuing unrest within senior management. In the last year, Dell has recruited — and lost — several executives from other Texas computer

companies, including Mark Yamagata, a veteran of Tandy Corp.'s marketing departments, who returned to Tandy, and Graham Beachum, another Tandy veteran, who was Dell's senior vice president of marketing and sales until he suddenly resigned earlier this year.

Dell claims criticism from outside the company is due primarily to envy stemming from the company's success. However, financial and industry analysts have long pointed to Dell's reliance on the direct-mail distribution channel as a long-term weakness, and the inexperience of Michael S. Dell, who, at 23, has not racked up years of business or management experience.

Over the last year, Dell has made several changes to address some of these concerns and strengthen itself for long-term growth. The company has expanded its product line and distribution and acquired seasoned managers.

Although Michael Dell has a

reputation for holding management reins tightly, he has recently hired experienced business and technical managers to handle more of the daily operations, giving Dell more time to cultivate relationships with the financial community, said Bruce Stephen, an IDC senior analyst.

For example, president Lee Walker, who has been with the company since 1986, has recently taken a more visible role at product announcements. In July, Dell hired G. Glenn Henry, a 19-year veteran of IBM, yielding his own role in research and development.

Pointing to the recent batch of executives who have left Dell, Stephen believes the key question is whether Dell can delegate midlevel tasks and keep a management team in place.

Despite the internal changes, the company has made inroads into the federal, Fortune 1000, and general business markets, Stephen conceded. The expanded product line now includes more PC models, peripherals, software, and accessories.

Sales for the 4-year-old company suggest its strategy is working.



Dell Computer founder Michael Dell (right) has hired seasoned business people such as president Lee Walker to help run the company.

Dell reported \$69 million in sales for fiscal year 1987, and that grew to \$159 million for fiscal year 1988, which closed at the end of January. Goldman, Sachs & Co. projects sales will reach \$245 million for the current fiscal year.

"Gains have been made in the 100-plus unit buying customer segment," said Dell. "Many of these, as well as midsized companies that buy 40, 50, 100 PCs, are standardizing on Dell," he added.

Countering criticism that the product delays and cancellations reflect that products were announced simply for publicity, Dell said the company was responding to market demands. "The demand is for the AT-bus machines," he said. "We'll probably come out with more models before the end of the year to meet customer requests."

Software Publishers Add Supplemental Support

By Rachel Parker

A new crop of software publishers has gotten into the supplemental support area, hoping to better serve and tie themselves to corporate accounts.

Early this month Micromin Inc. unveiled a special support program for corporate and government customers. The two-tiered Corporate Services Program provides a range of services for large organizations using Rbase.

Under the Standard CSP, subscribers can make an unlimited number of support calls, which are guaranteed to be answered in four hours. Companies can designate four individuals to make calls. Subscribers receive free software updates, discounted product upgrades, access to Micromin's electronic bulletin board, and pre-release and evaluation copies of software. Standard CSP is \$4,000 per year per customer site.

To this core, the Premier CSP adds a dedicated senior technical support representative and consultation and training sessions. Premier CSP costs \$9,950 per year.

Symantec Corp. structured a support program for Time Line project manager. The new Customer

Assistance That's Responsive and Effective, or Care program, includes a plethora of services for novices to advanced project managers.

While basic phone support is still available for free, Symantec is offering a range of services, including several training courses and consulting services, under a fee-based program. The Corporate Support Program under Care is designed for companies that register more than 20 Time Line users. Program participants receive Time Line upgrades for free periodic field maintenance updates, priority phone support, reduced rates for services, and pre-release copies of future Time Line versions.

Last month Computer Associates launched its Professional Services Program, offering consulting and training to corporate accounts using the company's decision support products.

Through the program, training courses will be offered at a customer's site or at one of Computer Associates' seven training centers. Course books and instructors' materials are also provided.

Paula S. Stone also contributed to this story.

Industry Standards Continue To Lead Egghead Top-Sellers List

TOP 10 MACINTOSH PRODUCTS		TOP 10 DOS PRODUCTS	
1	Mac Draw II, Claris Corp.	1	Lotus 1-2-3, 2.01, Lotus
2	Word, 3.01 - 3.02, Microsoft	2	Word Perfect 5.0 and 4.2, Word Perfect
3	Excel 1.5, Microsoft	3	Database Plus 1.1, Ashton-Tate
4	Powerpoint 2.0, Microsoft	4	Word 4.0, Microsoft
5	Tops 2.0, Tops	5	Harvard Graphics 2.1, Software Publishing Corp.
6	PageMaker 3.0, Aldus	6	Windows/286, Microsoft
7	Canvas 1.0, Deneba Systems	7	Multimate Advantage II, Ashton-Tate
8	Quicken 1.0, Intuit	8	Norton Utilities Advance Kit, Peter Norton Computing
9	Filemaker II, Claris Corp.	9	Freelance Plus, Lotus
10	Mac Project II, Claris Corp.	10	Symphony, Lotus

SOURCE: EGGHEAD DISCOUNT SOFTWARE. BASED ON GROSS CORPORATE SALES BETWEEN JULY 27 AND AUGUST 27.

Familiar titles captured the top spots in Egghead's sales, while newcomers Filemaker II and Mac Project II joined the list.

Tech Street

By John Gantz



CAS: No Tattered Ensign Swinging in the Breeze

Having read the press kit and the minimalist write-ups in the com-

puter and communications industry trade press, I haven't decided yet whether the recent Intel/Digital Communications Associates announcement of their Communicative Applications Specification (CAS) is (1) midsummer market hype, (2) ratification of a de facto standard, or (3) a bigger announcement than Apple's Hypercard.

My inclination — cynic that I am — is to think that it's the latter. It could be a big deal. Not quite revolutionary, but big.

To refresh your memory, CAS is a publicly available specification developed by Intel's Personal Computer Enhancement Operator group and DCA (mostly its Crosstalk group) to allow developers of applications programs to bundle communications capabilities right into their programs. Currently, it's generally necessary to log off of the applications and into a separate communications program to effect electronic communications. In many cases, with the transmission of the column from Westwood, Massachusetts, to Menlo Park, California, it's also necessary to convert the applications file into a plain-vanilla ASCII file, which means the end of italics, underlines, and other clever editorial dramas.

With CAS, the theory goes, users will be able to ship documents and files as an option directly off the applications package menu.

What's more, delivery will be even better than the defunct Federal Express ZAP Mail. The same document can be simultaneously shipped to other PCs, host computers, facsimile devices, and local area networks as long as the receiving computers have CAS capabilities.

In and of itself, CAS is less than mind-boggling. As *InfoWorld's* headline (August 22) pointed out, it's just another spec being "run up the flagpole."

Of course, if Ashton-Tate, Microsoft, Borland, Lotus, and DCA are all saluting, that may be a tip-off that CAS is more than just another tattered ensign swinging in the breeze.

But widespread software supplier support for CAS is merely a necessary condition for its success, not a sufficient condition (for those of you who remember your introductory logic courses), CAS will have to measurably change the way we conduct personal (or workstation or work group) computing to be considered significant and to generate any great financial opportunity for its conceivers.

At the moment, the initial advantage of CAS — given that its first embodiment is in a 3985 coprocessor board offered by Intel — is cheap 9,600-bps modem communications and PC-to-fax communication in a single board. If the PC-to-fax market is as hot as the market researchers say,

CAS may make it on that strength alone.

But as a user who's always been mystified by the intricacies of data communications (learning Crosstalk five years ago was akin to learning Sanskrit), I think I can truly appreciate what communications as a menu option means. Most power users, to whom electronic communications is as easy as running through a few DOS commands, have no idea how unsophisticated the casual PC user (like me) can be. Forget setting the modem DIP switches; locating them is tough enough. If communications can truly happen at the applications level, from the keyboard of a technically unsophisticated user, and in background mode — that's significant.

Again, though, it's still only necessary, not sufficient, to CAS' success. The final ingredient will be what CAS allows us to do differently that we always wanted to do without realizing it. I can think of a few capabilities:

- Store-and-forward document transmission and broadcast. I'm not sure we're talking distribution of price books or contract change orders, but the business of store-and-forward inter-company memo sending could clearly soak up some of this kind of capability. Think of it as a poor man's EDI (electronic data interchange) or a private MCI Mail.

- Micro-mainframe links. Won't CAS, once it supports IBM 3270 terminal emulation and other telecommunications protocols, enable applications packages to talk to mainframe computers easier — even if only to use the mainframe as a giant storage shed for old spreadsheets, documents, or DBase II files?

- LAN-to-LAN communications. If there's some way to make a seamless connection, albeit with slower response time, between LANs — my PC talking to your LAN — and CAS is it, then I can see utility in it.

- Remote monitoring. Isn't there a way that an application based on some kind of input — sensor signals, calculations, data combinations — could trigger its own communication that would be meaningful? Environmental monitoring, stock market analysis, and network management come to mind.

Not that I think CAS will be a panacea. Even if application developers build to the spec, somebody in the user organization will have to establish and maintain distribution directories and, presumably, the scripts for outbound dialing and log-on.

We aren't putting techies out of business here. But maybe we're making it easier for technology nudniks like me to get the word out electronically.

John Gantz is editor of the Tech Street Journal, a newsletter on the high-tech stock market and business performance. The views expressed are his own.

Tech Talk

By Steve Gibson



Tracing the Ancestry of Computer Display Screens

Last week we saw that the display screens of our computers rely entirely upon our eye's persistence of vision to assemble the illusion of an image on the screen. Each dot that comprises the display must be redrawn, or refreshed, at least 60 times each second to appear continuously illuminated. This week we'll examine the evolution of our display screens, giving some perspective to where we've been and where we are today.

The original Color Graphics Adapter (CGA) traces its ancestry directly from commercial television. Commercial TV refreshes its screen exactly 60 times per second, with a horizontal scanning frequency of 15.750 cycles per second. The IBM CGA display utilizes this timing to support the images it generates. The total number of horizontal scanning lines traced onto the screen by a CGA system can be determined simply by calculating how many horizontal lines are scanned out during one vertical scan. Since the screen is scanned vertically 60 times per second, we divide 15.750 by 60 to yield the horizontal line count: 262.5. Two hundred of these scan lines are used to display actual image data, with the balance used to illuminate the CGA screen's border region.

As we all remember, the CGA was not known for producing highly legible text (for some it's not yet a memory). The prime determinant of text quality is the number of individual pixel dots available to display individual characters. Dividing 200 total image lines by 25 lines of text yields just 8 scanning lines available per text line. Then, since the CGA adapter was capable of displaying 640 dots across a horizontal line, dividing this by 80 characters per line yields 8 pixel dots horizontally per character.

So CGA technology yielded a budget of 8 by 8 pixels per character. Since it is necessary to separate characters by at least one blank pixel, and since characters are taller than they are wide, CGA characters were designed to fit within a rectangle of dots 5 wide by 7 high. If you have a few moments to spare sometime with some graph paper, try designing an entire upper- and lowercase alphabet where each character fits within a 5 by 7 pixel cell. It's not simple, and there is no really great solution.

Driven by the concern that serious business computer users would be very unhappy with the appearance of CGA text, IBM decided to provide a better text display alternative. The Monochrome Display Adapter (MDA) was the result. In order to deliver more legible characters, more pixels are required horizontally and vertically. Where the CGA fits 5 by 7 characters into 8 by 8 "cells," the IBM monochrome display provides much higher resolution 7 by 9 characters within a 9-by-14 space.

Changing the character resolution

from 5 by 7 to 7 by 9 results in a tremendous improvement in character legibility, and a 2-pixel horizontal intercharacter spacing with a 5-pixel vertical spacing leaves the display's characters feeling quite uncrowded.

The question is, where did IBM get all those extra scan lines? Twenty-five lines of text with 14 scan lines per line means a total of 350 active scan lines compared to the CGA's 200. The scan-line count can be increased by increasing the horizontal scan frequency so more lines are scanned per second, or by decreasing the overall vertical refresh rate, thus allowing more time to scan the horizontal lines.

Many people can perceive flicker where others don't.

IBM did both of these things to create the MDA standard. The MDA refreshes its screen at only 50 cycles per second, with a horizontal scan rate of 18,432 hertz. Now, dividing 18,432 by 50 yields about 368 scan lines. Since 350 of these are required for text display, the MDA is not capable of displaying a border.

But how can IBM refresh the MDA screen at only 50 cycles per second if we begin noticing a flicker as refresh frequencies fall below 60 cycles per second? IBM compensated for our lack of vision persistence by designing a highly persistent green phosphor into its monochrome display. Many people immediately noticed a "smeary" effect whenever the IBM monochrome display scrolled text. This smearing was created by the use of a long-persistence phosphor that continued to glow long after the screen's electron beam stopped refreshing the region.

If you've ever noticed an annoying continuous flicker from an inexpensive clone's monochrome display, now you know why. Most clone monochrome displays use less-expensive standard short- or medium-length phosphors that are inadequate for masking the effects of the MDA's lower refresh rate. Also, the flicker-perception phenomenon is extremely subjective — many people can perceive flicker where others don't. I tend not to see flicker where other people are being driven nuts by it.

With an understanding of the interactions of horizontal and vertical scan rates and display resolution, we're ready to explore the EGA, VGA, and multisync technologies.

Steve Gibson is the developer and publisher of Spin Rite and president of Gibson Research Corp. of Irvine, California. The views are his own.

The Dell System 220. Once again, the critics stole the words right out of our mouth.

"The hot item from a technical point of view is the System 220. This machine runs a 286 processor at 20 MHz..."

—WILL FASTIE, PC WEEK

"The Dell System 220 runs most PC Labs system benchmark tests at speeds that would make you think you're running a 386."

—JOHN DICKINSON, PC MAGAZINE

"...the System 220 has more going for it than just speed."

—PC WORLD

"...includes a year's on-site support...in the price of the computer. This is the sweetest support deal offered by any computer vendor in the industry."

—ERIC KNORR, PC WORLD

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To the Editor

OS/2 TECHNO-MELODRAMA

William Zachman (On The Horizon, August 22) is in a coy mood. Although writing that he is still 95 percent sure OS/2 will take over from MS-DOS as the operating system of choice in the Intel-based PC world, he admits to feeling somewhat nervous about some contrary indicators. His rhetorical method reminds me most of the newsletters people got from stock market advisers — in November of 1988.

His claim to being nearly alone in this skeptical posture to the contrary, many programmers and developers I know are doubtful about OS/2 making a big splash and have been since nearly the beginning of this technodrama.

Zachman's argument in favor of OS/2 taking over the market is that nobody he knows thinks any differently. (I believe he ought to get out more.)

However, some arguments are now presented against the formerly inevitable outcome. In brief: 1) Extended Edition is "a major dud." 2) Most machines now can't or shouldn't run it. 3) It might be late or buggy, depending on how much faith you put in the rumor mill. 4) Presentation Manager might be late or buggy.

It's hard to believe this is intended to be the "contrarian" point of view. Allow me: What, if anything, would be the justification for an OS/2 in the first place? Well, there are some good things you could do by going beyond DOS. It would be useful for some to run more than one program at a time, get background mail and file sharing, multiple users, have inter-process communication, a graphical interface, etc. Fine. Many of these will be addressed by OS/2 at some point.

But let's look at the flip side: • Pretty short shrift has been given to having enough machines that can run OS/2 to give it the vast market penetration anticipated. In point of fact, most MS-DOS machines cannot

run OS/2 without enhancements that seem to be in the \$600 to \$3,500 range: a new motherboard or processor card, probably more disk, probably better video, probably more RAM. In other words, a total revamp.

• OS/2 is projected to be pricey to the end-user, several times more so than MS-DOS in its cheapest configuration. This is on top of the machine price.

• DOS will not stand still. Even if it were neglected by Microsoft and IBM, other parties will continue to make better and better enhancements and clones of it. After all, if OS/2 can't run on the old PCs, that market will be wide open for Xenix, DRI, Desqview, and the rest.

Will OS/2 sell to somebody? Sure it will — if they eventually complete it. Will it take the PC world by storm? Will it someday become the operating system on most office PCs? No way.

Chuck Hughes
Los Angeles

STOP BEATING THE BUSHES

In regard to Robert X. Cringely's column of August 22: Please cease with the George Bush bashing comments. This is supposed to be a computer weekly, not a political rag.

Many of us feel a free-trading Mr. Bush is much more beneficial to the average computer user than a protectionist Dukakis. So quit it or at least give equal and fair representation to the other side.

Dave Howell
Project Engineering Manager
Precision Investment Casting
Oregon City, OR

As with our other columnists, the views Cringely expresses are his own and do not reflect InfoWorld's opinion. As far as giving equal and fair representation, Cringely promises to work on a few more Dukakis and Bentsen bashing columns to balance out the number of

times he's besmirched the Republican dynamic duo.

KEY QUESTIONS

I could not help but comment on the Rainbow "Sentinel Pro" hardware key (August 29) intended to prevent software piracy.

Just a few simple questions before companies run out and create new copy protection schemes. Will we have to have a different key for each application program we run? How very convenient it will be to crawl on the floor to the rear of our floor-standing tower computers to plug in the key. It will also be interesting watching someone juggle the keys when running a variety of multitasking software. Or will the keys piggyback onto one another in a long chain extending out a foot or two behind the computer?

The more things change, the more they stay the same.

Fred J. Kaufman
Seattle

CORRECTION

In our July 22 article, "QMS' Mac Jet Lets Mac Users Link to HP Laserjet Printers," the price and availability of QMS Inc.'s Mac Jet were incorrect. The program, which permits Macintosh Models 512 or later to use the Hewlett-Packard Laserjet, Laserjet Plus, Laserjet Series II, Laserjet 500, and other HP Printer Control Language-compatible printers, will be available November 1 at a suggested price of \$249.

Please write to Letters, InfoWorld, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025 (IMCI Mail: 259-4127; Compuserve: 73267, 1537; or The Source: TCX939). Include your name, address, and daytime telephone number. Letters selected for publication will be edited for length and clarity.

Resources

September 14-17, Santa Clara, CA: The third annual Seybold Desktop Publishing Conference Seminar and Exposition covers more than two dozen publishing topics with 80 speakers and features more than 150 vendors.

Contact: Seybold Seminars, (213) 457-5850. Location: Santa Clara Convention Center. Fee: \$795; \$25 for Expo only.

September 15, New York: The Information Center Managers Association of New York will present Arun Gupta, cofounder and CEO of Dataease International Inc., at its monthly meeting.

Future directions will be discussed, followed by questions and answers. A Dataease product line demonstration will be included.

The meeting begins at 9 a.m. Contact: Joseph Sasso, (201) 284-5174. Location: Irving Trust, 101 Barclay St. Fee: Free to members \$100

per year per information center.

September 26-29, Chicago: IDG Conference Management Group's second annual CD ROM expo will focus on users' concerns about hardware, software, and applications for CD ROM as a data storage medium.

The four-day event will offer several tiers of courses beginning with a workshop series. Contact: P.O. Box 9171, Framingham, MA 01701-9171; (800) 225-4698. Location: Hyatt Regency Downtown.

September 27-29, Dallas: Network '88 attempts to address the marketing, purchasing, and educational needs of the connectivity market. The topics to be covered include planning, user views, mass storage, groupware, cabling, standards, training, security, and networking alternatives. Contact: Annie Zidnak, (201) 569-6406. Location: Dallas Infomart. Fee: \$40 to \$150.

September 29-30, San Francisco: October 3-4, Washington: Desktop publishing is the focus of this American Management Association seminar. Meetings will cover basic concepts in typography and design, selecting hardware and software for desktop publishing, packaged systems, and implementation.

Contact: AMA Registration, 135 W. 50th St., New York, NY 10020; (515) 891-0065. Location: In San Francisco, Miyako Hotel; in Washington, AMA Management Center. Fee: AMA members, \$695; nonmembers, \$795.

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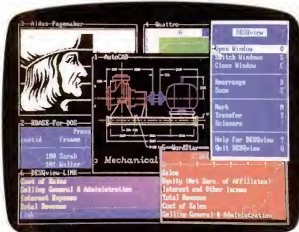
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MACINTOSH

Volume 10, Issue 37 • Target Edition No. 17 • Supplement to InfoWorld

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Alan Kalks talks about his work with Apple and its Vivarium project, which is exploring ways of using artificial intelligence, computer interfaces, and graphics to help people learn..... **\$3**

A NEW BREED OF DEALER

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SUPPORT

Mac Training Becoming the Norm

INTRODUCTION OF MAC II AND SE SPawns A BURGEONING INDUSTRY

By LAURIE FLYNN

Although the Macintosh desktop interface is generally considered far easier to navigate around than DOS, the recent explosion in Mac training and consulting bears evidence that some people need help learning and using Apple's machines.

Only a few years ago, users would have been hard-pressed to find anyone who thought he needed formal training on the Mac. "I didn't want to run my own company, but I couldn't convince anybody else that training would become necessary on the Mac," said Susan Barton, who now runs Personal Training Systems, which sells training software to Mac users.

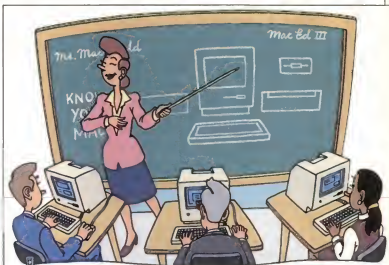
"I first had to convince people, but now people who have Macintoshes don't question that you need training," Barton said. "It's the people who don't have one who have the impression it's not necessary."

Of course, part of the need for training stems from the new, more sophisticated software for the Macintosh, targeted at users trying to run entire businesses, in many cases.

"If Apple is going to get into the scientific and engineering markets, the government market, and the business market, then the software's going to become more complicated," said Don Ritter, president of the MECCA User group and head of the User Group News Service.

"Before, you could poke around [a new application] and learn something," Barton said. "Now, not all of the commands are on the menus. I would dare anybody to pick up Illustrator '88 and just poke through the menus and try to learn something."

According to Adam Heath of the Boston Computer Society Mac SIG, the Mac may be easier to use than a PC, but that



doesn't make it easy. "For someone switching from another system, things that seem intuitive or transparent on a Mac might not be," he said.

"If you just look at the way the Finder and the Control Panel have changed since 1984, you can see why you need consultants," said Greg Waldorf, a Macintosh consultant with Integrated Business System, in Los Angeles. "We set up a system for somebody the other day where they were using the original Imagewriter driver."

"When people say the Macintosh is easy to use, it's a relative statement," Waldorf added.

The increasing complexity of the Macintosh operating system has brought a new level of complexity to Mac networking as well, said Waldorf, and the burgeoning market for Macintosh network specialists

attests to that fact.

"The development of the system folder has made network integration a much more advanced problem," Waldorf said. "You really have to be up on every thing."

AT YOUR SERVICE. Since the introduction last year of the Mac SE and Mac II and Apple's accompanying success in the corporate community, a whole industry of training and support services, including courses, books, and consultants, has sprung up almost overnight. From these services, companies are looking for insight into software as well as greater efficiency and productivity.

"The awareness of the need for training has suddenly increased with the penetration of the Mac in businesses," Barton said. "They're now putting them in."

See Training Page 53

BREAKING THE PC BARRIER

Enthusiasts Push Companies to Adopt Macintoshes

By NICK ARNETT

Despite the well-publicized improvements in the Macintosh, getting a PC-entrenched organization to adopt Macs is still something of a challenge for many Mac devotees.

Just ask one manager and his coworker, who designed Hypercard software to simplify controlling a sophisticated signal-switching system. They showed their boss how well it worked and demonstrated that only a Mac could do it.

Unfortunately, they work at a company that makes its own computers — ones that follow the other industry standard.

Sure, you can use a Mac, the boss said. Just make a few minor changes: Mount the Mac in a hardware rack out of sight, skip the Apple monitor in favor of one of ours, replace the Apple mouse with a generic trackball, and edit the Mac system software to get rid of the Apple logo at the left corner of the menu bar. That's all.

The manager and his friend are still using their own Macs, and they're not holding their breath waiting for the boss to approve the purchase.

THE BOSS'S PREJUDICE. When companies do accept the Mac,

it's almost always because a key executive, not a computer professional, decides it is best, said David Allred, owner of Photon Inc., a Cambridge, Massachusetts, Macintosh consulting firm.

For example, Allred was approached by the president of a 300-person financial services company to help him persuade his board of directors to use Macs in addition to the firm's minicomputer.



"I think in this particular case, and in most cases, the people making the decisions are very open-minded about trying new technology," Allred said. "A lot of the time they're very astute in that they know what the capabilities and limitations are of various things. The president knew the limitations of the minicomputer and what it could do."

Allred helped create a sample animated trade show exhibit using Macromind Inc.'s Videoworks.

"[The directors] were shown state-of-the-art Mac technology," Allred said. "The Videoworks presentation stressed the fact that you can do very sophisticated graphics with sound and animation — something you'd be very hard-pressed to do on an IBM [PC]."

Allred also helped the company develop an "electronic brochure" with Apple's Hypercard. "The company offers a variety of services in the financial field," he explained. "The idea was that the sales force could use the Hypercard product as a very agile method of getting to all the different types of information."

The presentation worked. The board approved purchases of Macs in stages. The installation of a pilot group of 25 Macs is under way, Allred said. They will replace a

See Adopt Page 55

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TRAINING

Continued From Page S1

desks of people who don't have the background, with no affection for computers. The people getting the Macs now are different from the ones who originally bought them."

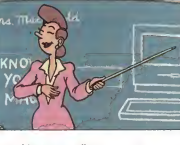
Macintosh communications experts and general-purpose Mac consultants — once a scarce commodity — have suddenly become a huge collection. A new group calling itself the Mac Consultants Network was recently formed to promote Mac-only consultants and act as a kind of watchdog organization, according to Waldorf, one of the founding members of the organization.

Apple user groups, which are a major channel of training and support, have also grown, numbering more than 1,000 today.

Apple, too, is beefing up its support efforts, including an on-line service providing access to Apple and third-party engineers. In the case of A/UX, for that matter, Apple even offers a toll-free support line, a first for any company that has for so long directed end-user support questions to the local dealer.

HYPERCONFUSION. Take Hypercard, for example. If the program's language is so easy to use, why is the best-selling book on the subject — supposedly the most popular Macintosh book long ever — more than 700 pages long?

"Hypercard is relatively easy to use if somebody has already set it up for you," said Barton. "But creating a Hypercard stack is incredibly hard to do. I would say the same thing about Apple's approach to networking. If the network's already set



up, it's easy to use."

Apple itself admits that Hypercard's first year has been marked by confusion, but it contends most of that centers not on how to use Hypercard but what to use it for. But to many, Hypercard is not the language "for the rest of us" that Apple bills it as. And for this reason, Hypercard-specific books, consultants, and training programs are also starting to appear.

"Hypercard is not a program mixing language for the average person," said Jack Hodgson, a founding member of the Boston Computer Society Mac group and new user's book author. "We're not talking Basic here."

TRAINING BY GAME. Consultants and support specialists, who know the Mac takes some getting used to, have found what might be an unexpected way to get users comfortable with the machines. With new users and longtime DOS users alike, support specialists recommend leaving a few games on the machine.

Not only can the right game encourage new users to become familiar with using a computer, but it can also help build skills such as pointing, clicking, and dragging the mouse, said David Allred, president of Photon, a Macintosh consulting company in Cambridge, Massachusetts.

Be it by game or by formal training, it's clear the Macintosh is attempting to perform more complicated tasks for an increasingly broad range of users, with a constantly deepening operating system. As this trend continues, the availability of support services for Mac users will continue to grow. □

■ INTERVIEW

Apple Fellow Alan Kay Turns Visions Into Reality

While he was at Xerox's Palo Alto Research Center, Apple fellow Alan Kay helped develop user interfaces and computing styles that have found their way into the Macintosh. Today, Kay is heading up Apple's Vivarium project in Southern California. The project, part research and part educational service, is devoted to using artificial intelligence, computer interfaces, and graphics to improve the way people learn. InfoWorld's Los Angeles bureau chief Mark Brownstein recently interviewed Kay.

How does the Macintosh compare to the original concept of the Dynabook, your idea of a notebook-size portable computer that could tap large computer's data via radio waves?

In 1968 I had a basic vision. I had just seen the first flat-panel display [which was considered to be many years away at the time] and I saw a step toward desktop computers and wondered how long it would take before you could put silicon on a desktop. I thought it could happen by 1979.

I later saw Seymour Papert's work with Logo and realized that you should be able to make a computer as useful and easy to use as a pencil.

I think the main difference between my original concept and the Mac was one of scope. In my early papers I envisioned a computer with a small amount of primary memory that could be swapped out to secondary memory. Back then, I thought it would be a bubble memory.

The Mac provides a wide variety of applications, but it isn't nearly as integrated as Dynabook would have been.

I also thought the end-users would do their own programming. And I worked on what it would take to allow end-users to make their own tools. The result of that work was Smalltalk. Smalltalk would have played the same role with Dynabook as HyperCard does today. HyperCard is better than Smalltalk. It's more powerful.

Do you still believe the end-users will do their own programming?

End-user programming will come to pass within five years. It will come about because of good end-user tools.

When Mac Paint came out, it was the icebreaker for desktop publishing. Not much later, Mac Draw and Pagemaker came out. Then came Ventura Publisher.

Hypercard and HyperTalk are half of an object-oriented language. We need to invent other things to complete the picture.

I believe that end-users are ready, willing, and interested in writing their own programs, but we have to give them the right tools. I believe end-user programming will be another important area, like desktop publishing has become.

Reflection Technologies just introduced a compact display that can be mounted onto eyeglasses or a head. How does that fit in with Dynabook?

When I conceived of Dynabook, I saw it in three physical forms. The first form was as a notebook. The second was with a head-mounted display. We were hoping for a position-sensing device. This would be a gimmick and isn't necessarily hard to build or expensive.

The device will give you a virtual display: using two displays, you can have a 3-D computer display superimposed on the real world.

The third form would be with everything networked. We'd all be living in information cells — much like people are doing with cellular phones.

We believe that around the year 2000 a



room will have a number of standard components: an electric light switch, electrical outlets, and some type of data connection. You can assume that whatever room you walk into, your information will go with you. The room might have a wall-mounted display, and you'd have a position-sensing device, like a transponder in a cellular network. You may also have speech recognition. When you go from room to room, or place to place, your user interface follows you.

How does John Sculley's Knowledge Navigator fit in with your vision?

The Knowledge Navigator is John's version of the Dynabook. It's been inspirational. Everybody at Apple is thrilled that John is supporting a concept. I'm a response to Knowledge Navigator was fantastic because it seemed to focus people, it became more real. It got people thinking about it.

We're getting the company to start thinking about systems. The systems will empower the individual through things that are networked.

The idea of an agent is a very old one, but it's still hard to do. There is no way to do everything on a network without active processing to take over some tasks.

In a network, the basic thing is service. What's available to you? How do you get to what? Knowledge Navigator is a way to get Apple to think about services.

What are the technical hurdles to developing the products you envision, and how do you think they'll be solved?

Where displays are concerned, there is no excuse for the United States to have given that technology to Japan. The Japanese have a lot of the basic patents in video display technology. We could have done a flat-screen thing that they didn't support long ago.

The Alto 3 computer developed by Xerox had displays with 500,000 pixels on-screen 12 years ago. And our units were already three years old.

If we could build the Dynabook today, there would be tremendous weight constraints. None of the lap computers today is in the right range, which we figure is about 3 pounds. If we had pushed hard in 1979 to 1981, and if display technology had been there, we probably could have done the Dynabook. But it's inevitable that we'll have something like it within two or three years.

The last thing we're waiting for is the right display. Much of the required technology is here today. We have more processing and more memory than needed. And there is enough stuff to develop a better user interface.

The hard part about doing Dynabook

is responding to the pressure to make it compatible with something. The basic flaw of products that have attempted to be like Dynabook is that not too far beneath the surface is MS-DOS.

Do you see any trade-offs Apple is making in its attempts to gain the confidence of the business market?

Apple hasn't given up much of anything. Part of the reason that it hasn't given up much is that it's been successful.

Apple is putting a lot of money into our research project, which is aimed basically at education.

Apple has done quite well. What they have to watch is the next years of fast growth. They can lose their corporate identity because they have so many new hires. They're trying to keep new hires very interested in what Apple stands for.

What do you see for Apple in the next few years?

The seeds of Apple's long-range plan are fairly obvious. Apple a few years ago would never have made an alliance with DEC. John Sculley got people to understand that the Macintosh user interface is the dashboard to use lots of products and systems. Networking ties you in. It's imperative that a communications system drive lots of things.

Apple is a user interface company. Apple should look at providing computing for the disenfranchised. We've only made a small impact on the disenfranchised, but the market there is enormous.

Part of Apple's destiny is to make the same penetrations into markets that television has made, maybe more. The goal would be to have the same kind of penetration that you have with wristwatches. We need to make a penetration driven by the user interface. Apple should think that their strength is their capability to open new markets with new user interfaces.

What is the Vivarium project, and how will it apply to more generalized computing applications?

The Vivarium project is being held at an Open School in Los Angeles. It's a special school, attended by all ages. The school is dense with computers. But unlike most schools, with computers shoved against a wall, we've built special desks with one or two Macintoshes and a plexiglass surface. We have a network, a file server, and a laser printer in each classroom, and the computers are always on but not in the way.

We've just completed the second year of the project. This year we taught Hypercard to students and teachers, and it was used to develop object-oriented programming for adults. Designing for adults is difficult because adults are willing to suffer. With a child, if your interface isn't good, the child won't use it.

The tools we design for children to build animal intelligences will help us to develop object-oriented programming for adults. Designing for adults is difficult because adults are willing to suffer. With a child, if your interface isn't good, the child won't use it.

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What is it like being an Apple fellow?

Apple fellows are wild ducks. We're supposed to be exploring alternatives. We're not in the critical [design] path. We've got a value-added way of doing things.

For example, Bill Atkinson, another Apple fellow, went off and developed HyperCard. He didn't ask Apple if it was a good idea.

Apple hopes its fellows will be both bizarre and reasonable. They're looking for directed craziness. □

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S I G M A D E S I G N S

ADOPT

Continued From Page S1

microfiche document-storage system. The system eventually will have 500,000 documents on-line, he said.

In a year, if all goes according to plan, the firm will have 200 Macs, Allred said.

GRAPHICS: THE TROJAN HORSE. Apple itself acknowledges that the Mac's superior graphics were a backdoor path to corporate America. Apple chief executive John Sculley has called desktop publishing Apple's "Trojan Horse" strategy.

At Booz, Allen & Hamilton Inc., a New York management consulting firm, desktop publishing on the Mac came to the firm's attention as a result of its recruiting among Apple's university consortium schools, said Craig Jorasz, a former Booz, Allen & Hamilton research associate who has since started a Macintosh software firm.

"Most of the people I was working with were from schools in the university consortium and were familiar with the Mac," Jorasz said. "Two of us were more experienced with the Mac than the others. We started pushing for it because we knew it would be a lot better."

A large part of the firm's output is graphic. "There are lots of charts and graphs and conceptual layouts, as consultants are prone to do," Jorasz said. He and others quickly demonstrated that a Mac could reduce turnaround time, compared to the Compags the office was using. Eventually, the firm bought Macs for the graphics department to take graphic production out of the hands of the consulting staff.

When Excel for the Mac came out, the Mac quickly won acceptance throughout the company, Jorasz said. "It ended up that the company could produce a report that looked a lot better on the Mac," he said. "It wasn't too far off from the Apple advertisement. We would go in and give a presentation, and many times the first question was, 'How did you do that?'"

RELUCTANCE TO TRY THE MAC. Today, Jorasz is president of Metropolis Software of Palo Alto, California, which markets Mac real estate applications. Now he's trying to get other companies to buy Macs.

"The [real estate] industry in general tends to be a little slow to adopt new things," Jorasz said. "Especially when you get out of California and the more progressive markets, people don't know what the Mac does."

The price difference between a Mac and an IBM clone keeps many people from considering the Mac. Metropolis has found that hands-on trials are the best way to show the Mac's strongest selling point: ease of use.

"A lot of people, after looking at the screens, take it more seriously," Jorasz said. "It's really different to read about it, compared to actually trying it."

QUANTIFYING EASE OF USE. The intuitive value of ease of use doesn't carry much weight in a large company unless it can be quantified, said people who have helped bring Macs into big corporations.

"There was a huge amount of resistance," said Tom Myers, a contractor at Eastman Kodak of Rochester, New York, who helped make the case for Macs in Kodak's Advanced Educational Technologies group. "Everything had to be rationalized. You would have to do a test first."

If the test was approved, the department would have to show that the investment resulted in an increase in productivity, Myers said. "Sometimes that can be very hard to do."

Today, there are a number of people at Kodak who see the Mac as the wave of the future, Myers said. "They sort of clone themselves once they get in the door," he

"A lot of people, after looking at the Mac's screens, take it more seriously. It's really different to read about it than to actually try it."

CRAIG JORASZ

said. "People fight to get them in the door in ones and twos. For instance, I brought in my Mac II to show what it could do. That led to many more because once you see what it can do, you realize that others just don't have the capabilities."

Like many companies, Kodak's first exposure to the Mac came from employees' machines. Eventually, having a Mac on the desk became a status symbol for managers, Myers said.

University recruits with Mac experience haven't had much impact on Ko-

dak's choice of Macs so far, Myers said.

"But it sounds good on a resume to say you worked in a Mac lab at college," he added. The early Macs were purchased by mid-to-high-income employees.

PAYING THE PRICE. Not all of the early converts were so financially secure. For example, John Meyer, a software engineer at the John Fluke Manufacturing Co., in Seattle, put off buying a Mac for three years as he could afford a Mac that traveled to work with him. Fluke makes test and measure-

ment equipment using a variety of computers, which were mostly Digital Equipment Corp. minicomputers and DEC Rainbow personal computers when Meyer first arrived.

There wasn't much resistance to bringing Macs into the engineering department, where they supplemented, rather than replaced, existing computers, Meyer said.

As usual, the first few Macs triggered more. "The marketing people were the first to really accept it because they needed something for producing graphic materials," Meyer said. "They bought more Macs and a Laserwriter."

Pretty soon, Macs were in demand by secretaries and executives alike. Perhaps the most telling sign of Fluke's conversion to the Mac is a general-use PC area that formerly held four IBM personal computers and a DEC Rainbow.

They're all gone now, replaced by two Mac IIs. For those who still want to run IBM software, one of the Macs has an AST Research Mac 286 card, Meyer said. □



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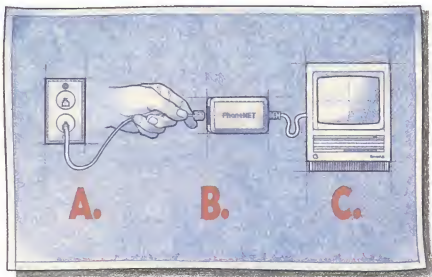
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■ DEALERS

System Houses
Combine Sales,
Technical Skills

BY NICK ARNETT

U.S. government agencies hardly ever stroll down the local store to buy computers. They require extensive analysis, complex inter-connected systems, and plenty of on-site training and technical support.

Selling to major corporations takes special resources, so it's logical that Apple Computer's top federal vendor is serving as a model for a new kind of Apple dealer.

Falcon Micro Systems of Landover, Maryland, Apple's primary government vendor, is a prototype for a new class of Apple dealer—retailers without storefronts. Apple added this category to its traditional dealer and value-added reseller ranks earlier this year. Eventually, officials believe, about 10 percent of Apple's 1,900 resellers will be non-storefront retailers. Authorizations under the new category, which is also called system centers, will happen slowly, said Godfrey Sullivan, director of Apple's U.S. reseller group.

REQUIREMENTS FOR NON-STOREFRONT RETAILERS. Although Apple is allowing authorizations to operate without a storefront, the dealers must have resources for marketing to sophisticated corporate customers.

Dealers in the new category are expected to be system houses—computer sellers with the technical skills to recommend and help manage complex arrangements of Macs, other computers, and the communications systems that link them within large organizations.

"If you look at what the customer requires in that marketplace, as distributors begin to specialize, systems become the market focus," Sullivan said. "We look at the need for some flexibility in our market approach."

In addition to being authorized Mac II and communications vendors, system centers must have a receptionist, a conference room, training facilities, and at least one full-time systems engineer and one service technician with the ability to provide on-site service.

With these capabilities, service centers should be able to achieve technological feats such as demonstrating networking between Macs and a Digital Equipment Corp. VAX minicomputer, Sullivan said.

FOLLOWING IBM'S LEAD. Apple's requirements echo those of IBM Corp., which instituted a similar strategy for authorizing non-storefront retailers in February, said Tim Bajarin, executive vice president of Creative Strategies Research International.

"The market has changed dramatically," Bajarin said. "Especially on the corporate side, where system integration is critical, customers will have more hand-holding. That's very important."

IBM's capability to provide customer-besides analysis and a broader range of products has been greater, Sullivan said.

"In our micro world we've done a reasonably good job," Sullivan said. "But we have to get better in terms of host communications and networked group activities."

Sullivan expects system houses to play on the Macintosh's traditional strengths: ease of use and the consistency of the user interface. "It's the same thing we've been selling for years," he added.

But now Apple wants dealers who can apply the Mac's strengths to big business.

COMPLETE SUPPORT. Apple wants dealers who will be able to offer customers sys-

tems-level analysis and a broad range of products, including networks and large computer systems, Sullivan said. "Corporate buyers and end-users want a higher level of support and service, and they want a higher level of needs analysis from someone with a systems approach," Sullivan said.

System houses that sell DEC equipment will have some advantage because of Apple's strategic partnership with that company, Sullivan said.

The Mac can serve as a "convenient workstation" when connected to DEC minis and other large systems, said Frank Valenza, director of productivity products at Data Management Associates of Albany and Newburgh, New York. DMA was one of the first system houses to receive Apple's approval as a retail dealer.

PROVIDING NEEDS ANALYSIS. DMA sells hardware from Prime Computers Inc., Plexus Computers Inc., Televideo Systems Inc., and others, as well as from Ap-

ple. Its target customers are large businesses that demand the level of support the company can offer.

Unlike an ordinary retailer, DMA has programmers and others with significant technical skills on its staff.

"One of the things we're very strong in is in-depth analysis of customers' needs," Valenza said. "We'll create a map of what they need to do over the next several years."

As a consultant to prospective system buyers, DMA prepares 50- to 100-page reports, for which it will refund half the price if the customer buys its systems from DMA, Valenza said.

DMA's programming staff also develops custom database applications, including software to link databases among microcomputers, minicomputers, and mainframes, Valenza said.

CONNECTIVITY SOLUTIONS. Similarly, Falcon Micro Systems is called upon by its customers—mostly federal agencies—to

connect computers as diverse as Macintoshes and Cray supercomputers, said Tom Ellis, Falcon's president and chief operating officer. Like DMA, Falcon offers a variety of proprietary and third-party hardware and software.

The software ranges from word processors to sophisticated graphics. Special services include an electronic bulletin board for government customers, Ellis said.

Both companies employ outside sales staffs with systems expertise. Falcon, which has grown from 60 to 140 staffers over the past year, has recruited heavily from system companies.

"Our technical support people have to be familiar with Wang, IBM, Digital, and other major systems," Ellis said.

To support system centers, Apple is boosting the support it can offer dealers. "We as an organization are expanding the number of systems engineers and our technical sales force," Sullivan said.

"More sophisticated customers require more arms and legs." □

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FIRST LOOK ■ Michael J. Miller

Packages Help Develop and Present Ideas, Simulate Processes

INSPIRATION

Sometimes the best way to really understand an idea or process is to sketch it out — on paper, on a keyboard, or on a computer screen. Consider the difference between a set of typed directions and a map.

If you can see your idea or process visually, you can see how things fit together and thus more easily change and develop it.

That's the concept behind Inspiration, a package from Ceres Software that lets you turn an idea in the form of an outline into a free-form diagram, thus getting a visual representation of your idea.

You typically begin by creating a text outline that includes the major points of your idea, which could be a plan or process, speech, or presentation. You start by entering a "main idea" and then add additional thoughts; the product includes all the basic outlining tools, letting you easily reorganize your outline and expand and collapse topics. As a fan of outlining, I like being able to represent an idea as an outline and found the outline portions to be sufficient, if not exceptional.

Once your outline is in place, you select a single menu option to turn it into a diagram. Each item in your outline is represented as a symbol on the diagram (initially an oval), and arrows link together the items, pointing from the main topic in the outline to the various subheads. Within the diagram, you can easily move these items around, edit or delete them, add new items, and change the links between them.

Beyond this, Inspiration offers a number of tools for making the diagram look good enough for presentation. You can change the symbol for each individual item from the default oval to several other icons, including a rectangle, cloud, light bulb, and desk. You can change the line thickness, the placement and direction of arrows, and the patterns represented on-screen. The basic drawing surface uses a grid pattern, and you can easily change the size of the grid for a particular row or column, or for the entire diagram. When you change the diagram, the outline changes as well.

In general, I think Inspiration is a neat way to take an idea and represent it in a visual format. It lets you see your ideas, making them easier to understand and develop. I also found the drawing tools to be quite sufficient for representing rather complex processes. Indeed, Inspiration's links and symbols made this easier than a conventional drawing program.

For working with smaller outlines and clear, simple ideas, Inspiration is quick and relatively easy to use. However, a few things make the product a little more difficult once you start doing more complicated diagrams. For instance, if your outline becomes too large, the program may not be able to convert it

"I think Inspiration is a neat way to take an idea and represent it in a visual format. It lets you see your ideas, making them easier to understand."

into a diagram. And once you have designed your diagram, if you go back to the outline view and make some changes, your diagram may be adjusted so lines overlap items in a confusing jumble. This can be frustrating. I'd like to be able to see a diagram based on only part of an outline, and I'd like more advanced outline features, both of which Ceres is working on for future versions.

Still, Inspiration is a nice, simple way to work with and develop ideas. If you typically work with smaller outlines of plans and presentations, or if you need an easier way to create a visual representation of a process, it's worth a look.

The outline program is available now at a cost of \$149 from Ceres Software, 9498 S.W. Barbur Blvd., Suite 103,

Portland, OR 97219; (503) 245-9011.

EXTEND

We've all seen computers used to answer the question, "What if?" Indeed, that's the whole reason spreadsheets work better on a computer than on lined paper. But "what if" analyses don't apply just to working with sets of numbers — they also can be used to look at complete processes, whether in business, engineering, science, or just about any discipline.

That's the point behind simulation packages such as Extend, from Imagine That. Extend lets you sketch out a process and attach a variety of modeling tools that let you simulate the process.

In Extend you represent simulations as a series of "blocks" — shown as icons. Each block is a particular part of the process; for instance, when simulating a business, each block can be a different product.

Several different components make up the block. You can add "connectors" for input and output. For instance, the cost of a particular item could be an input connector, while total costs would be an output connector. You define the actual model through a C-like language, called Modl, which looks quite powerful. For example, you can calculate total costs as a function of the costs of various other items.

The block consists of other items as well, including a dialog box for data entry and help files. The program makes it quite easy to create these dialog boxes, letting you define the various components through a menu-driven approach that resembles a database applications generator. You can draw the icon using a number of drawing tools or import the image from a paint or draw program via the clipboard.

Data flows between the blocks through "signal lines," the connect output connectors from one block with input connectors from another. Alternately, you can name signal lines and draw connections to and from the names, so your model looks less cluttered.

Once you have created a series of

blocks and linked them together, you can then "run" a simulation. This typically plots your output in a graph on-screen, showing how the variables change over a period of time. In addition, the exact values for each time period are shown in a table. This makes Extend particularly useful for seeing how things change over time, such as showing costs, revenues, and profits over several years.

These results are shown within a pre-defined "plotter" block, which itself offers many options. You can decide which of up to four variables to monitor and show the results for a particular time slice as well as change the scale of the graph and the colors and patterns of the different variables. In general, this works quite nicely.

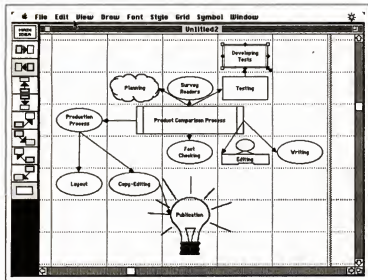
Although all this sounds complicated, Extend is easier to use than you might guess. While creating your first blocks and learning the basics of the programming language is a bit of a barrier, Extend's window system and on-line help are quite useful, though I wish the help system were more context-sensitive.

To help you create additional models, Extend is designed to help create models of real-world processes and show how these processes change over time. It seems to work best with processes that can be modeled as a series of simple functions, rather than as spreadsheet-style data groupings. (The vendor said a future version will import spreadsheet data.)

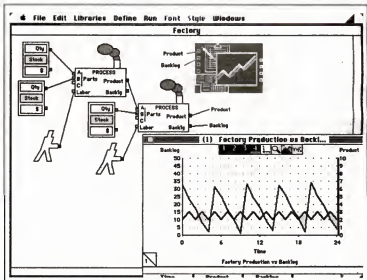
In many respects, the concept is similar to that of Stella, a business simulation package (see First Look, Macintosh Target Edition, April 11), though Extend's block libraries and sophisticated modeling language make it seem a bit more advanced.

The \$495 program requires a Macintosh Plus or higher with at least two floppy drives (a hard disk is recommended). It is available from Imagine That, 7109 Via Carmela, San Jose, CA 95139; (408) 365-0305.

First Look examines new personal computer products before they have been through a formal review.



Inspiration lets you take an outline and convert it into a visual diagram, such as this simple representation of the InfoWorld product comparison process.



In Extend you can simulate a process on-screen, allowing you to see how different variables change over time, such as backlog and production in this factory model.

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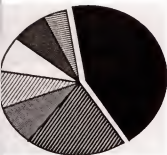
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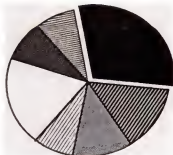
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PRODUCT COMPARISON

Show Off!

Three Packages That Boost Your Macintosh Desktop Presentations

By DOUG AND DENISE GREEN, REVIEW BOARD

CRICKET PRESENTS VERSION 1.0

Cricket Presents is the newest member of the Cricket product line, which also includes the popular Cricket Graph and Cricket Draw. It has excellent drawing features and offers a fine range of color, graphing, and output options.

This product comes with a few extras: two disks of color and black-and-white templates, the Acta desk accessory outline (included in the purchase price), and the capability to print presentations using a wide variety of output devices.

The drawing tools available in Cricket Presents surpass those of competing desktop presentation products. In fact, the program includes most of the tools available in Cricket Draw. In addition to the basic lines, ovals, and rectangles, the program offers arcs, diamonds, parallelograms, polygons, a freehand tool, and a border tool, which includes six styles of borders and two types of corners. The program also features four levels of magnification and four levels of reduction.

The drawing tools also offer 35 fill patterns, five line widths, and three types of arrowheads. This is in addition to the more than 16 million colors available on the Macintosh II color palette. You can group objects so they can be moved as a unit or ungroup them if you want to edit individual objects.

You can take advantage of rulers, which can measure in inches, centimeters, picas, or pixels. You can also show grid lines for fine positioning of objects. For a desktop presentation package, Cricket Presents has an excellent set of drawing tools.

Another icon on the tool menu is the graphing tool, which lets you quickly draw business graphs and place them in your presentation. Choices include bar charts, column charts, line graphs, area charts, scatter charts, and pie charts. You can also have stacked bar and stacked column charts.

You can control the font size and style of the axis labels, data point markers, and legends, as well as color and fill patterns. There are also options for grid lines and for adding a 3-D look to your graph. Graphs can be resized by clicking and dragging on corner handles. You can have numeric values along the x-axis, but

numeric or scientific graphs aren't possible since spacing must be constant between points. This is common among desktop presentation packages, however. We rate Cricket Presents' graphing tools good.

When the word processing tool is selected from the tool menu, a ruler and justification and tab icons appear on the screen. Within any text object you can vary the font, size, style, and color of any group of characters. Leading can be adjusted, but only on a paragraph-by-paragraph basis.

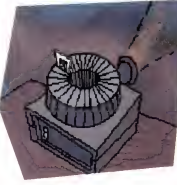
The last tool in the Cricket kit is a table tool. This is like a little spreadsheet, without the capability to enter or copy formulas. You can have up to eight rows and columns, and the width and justification can be adjusted for each individual column. We found this tool much easier to use than the text tool for slides that require tabular data. Cricket Presents' text tools rate a very good score.

Despite Cricket Presents' many features, you may still wish to import drawings and paintings created in other applications. This is no problem since Cricket Presents can accept files from all Cricket products (in PICT format), as well as Mac Paint, PICT, PICT II, and Encapsulated Postscript formats. You can add color to any PICT or Mac Paint file. Since all of the standard file types can be imported, we rate this category good.

Besides the 3-D-type option for graphs, Cricket Presents offers 11 special effects for on-screen slide shows. You can set the duration and dissolve on a presentationwide or slide-by-slide basis. A template feature is also available that

applies the same objects or text pattern to any range of slides. You can browse through the available templates using the get-templates option. As you click on a file name, a miniature version of the corresponding template appears on the screen. Cricket Presents' enhancement options earn a good rating.

When you're ready to print your report, you can select the sketch display option from the page setup menu. This is particularly important when printing a color presentation on a black-and-white output device. If you fail to select it, printed copy will be mostly black.



As with Powerpoint and Standout, Cricket Presents features an on-screen slide show option that can be set to progress automatically (including password protection) or for manual control.

Cricket Presents supports Apple's Imagewriter and Laserwriter, the HP Paintjet, and a variety of non-Postscript printers with Cricket device drivers. Cricket currently ships a driver for Presentation Technologies' Montage film recorder and has announced plans to begin supporting the high-end Solitaire film recorder from Management Graphics. It will also work with other Macintosh-compatible film recorders.

If your company doesn't have its own film recorder, you can send your files directly to Autographix for slide, color overhead, or color print production. Cricket also supports the service via modem, and a driver is included on one of the release disks.

We sent a file to Autographix on a Wednesday and received the finished slides the following Monday. We used an overnight delivery service in both directions. We were very pleased with the quality of the finished product. The output looked just like it did on our Mac screen, and at \$14 per slide and \$9 per overhead, the price is right. We rate output support very good.

Cricket Presents comes with a user guide and a reference manual. A short update is also included. The first part of the reference manual includes a brief tutorial that takes you through the process of creating a short presentation. Although the tutorial could be more extensive, it's a good introduction to the template feature. The manuals are fairly complete and are adequate as references. However, there are a few minor errors, and the index was not as thorough as we would have liked.

Perhaps the best part of the documentation is the Hypercard stack Cricket ships with the package. In fact, the package is easier to understand if you start with the stack rather than plowing through the manual.

Overall, Cricket's documentation earns a good score.

Cricket Presents is a bit like an integrated package that does everything under a single icon. Since it uses many

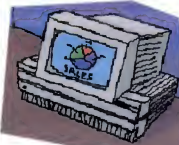


text editing, and automatic speaker's notes and handouts. In recognition of the fact that good presentations often begin life as well-organized outlines, Powerpoint also came with the capability to read More files directly.

About the same time film recorders for the Mac were becoming more abundant and affordable, Mac-compatible overhead projection systems also became available. This meant you were no longer limited to using acetate overheads when giving a talk.

With the introduction of the three products reviewed here — Cricket Presents, Powerpoint 2.0, and Standout — we see the next steps in the evolution of Macintosh desktop presentations. The newest features include access to the over 16 million colors available on the Mac II, built-in business graphing capabilities, spelling checkers, and a host of additional features normally found in packages for drawing, word processing, or page layout.

It is also clear that existing products are likely to improve quickly. Competition is already on the way in the form of Persuasion from Aldus and More II.



PRODUCT SUMMARY

Cricket Presents

VERSION 1.0

Company: Cricket Software, 40 Valley Stream Parkway, Malvern, PA 19355; (215) 251-9890.
List Price: \$495.

Requires: Macintosh Plus, SE, or Mac II with 1 megabyte of RAM and a hard disk.

Pros: Excellent drawing tools, integrated business graphics and table tools; direct output from Autographix slide service.

Cons: No spelling checker; selecting color options is cumbersome; no background shading; cannot directly read text from an outline.

Summary: Cricket Presents is a somewhat expensive but complete desktop presentation tool. It contains text editing, full object-oriented drawing, graphing, tabling, image handling, and on-line video shows.

aspects of drawing, word processing, graphing, and spreadsheet packages, your level of experience with other Macintosh products will determine how quickly you'll be able to learn the product. Users apt to have the most difficulty are those who've used painting programs but have no experience with object-oriented drawing packages. Ease of learning earns a very good score.

We found the drawing and word processing tools easy to use. The graphing tool is the easiest, most intuitive we've seen in this type of package, and the addition of the table tool makes tabular data simple to create and edit. The only serious drawback seems to be the lack of a spelling checker.

Templates in Cricket Presents are a mixed bag. It's great that they can be applied to any range of slides you wish. However you apply them, they can be edited further only on a slide-by-slide basis.

Selecting and applying colors to charts and slides is an adventure. When you press the color menu, you are presented with about 64 options that seem to scroll endlessly off the bottom of the page. If you want to see the selected color, you have to go to the edit-colors menu, which is time-consuming. On the plus side, you can load in other palettes from the disk and even make your own. But if you want to be truly productive, it's best to make your own palette and place the often-used colors at the top of the menu. This should save some time and confusion. Ease of use balances out to a good score.

We encountered no system crashes using Cricket Presents. But we couldn't get the Autographix driver to send our file via modem, even with help from the Autographix staff. According to a spokesman from Autographix, an updated communications module is now shipping with the package and is being sent to users who call with a similar problem. Since this is the only problem we encountered, we rate error handling satisfactory.

Cricket offers free unlimited technical support, but the call is not toll free. Corporate support plans are available. Cricket is also developing a quarterly newsletter that will be sent out to all registered users. Support policies are satisfactory.

The technicians we spoke with were very knowledgeable about the product and had little difficulty fielding our questions. They were also able to suggest ways to work around problems. We rate technical support very good.

At \$495, Cricket Presents is more expensive than other products tested, but it provides a fine object-oriented drawing package, a word processing system with almost as much functionality as the original Mac Write, a fair business graphing package, and access to a high-quality inexpensive color output service.

When you add all this up, the net result is a satisfactory value.

MICROSOFT POWERPOINT

VERSION 2.0

Powerpoint 2.0 from Microsoft is the latest revision of the desktop presentation package originally published by Forethought. Like the original version, Powerpoint 2.0 has the capability to draw extensive sets of diagrams, write text on slides using its built-in word processor, and import graphics from a variety of other applications. This new version has been enhanced with color capabilities, additional output options, and a spelling checker.

Powerpoint does not offer a complete object-oriented drawing environment, but the basics are all there. The four tools included allow you to make lines (with or without arrowheads), ovals or circles, rectangles, and rounded rectangles. Each tool also has 10 line styles and 22 fill patterns, and you can select any of the 16 million colors available on a Mac II. This is a satisfactory assortment of drawing tools.

In contrast, Powerpoint has no internal graphing capabilities. Business presentations often include simple graphs, and it would be convenient if they could be done from within Powerpoint.

Powerpoint features two text tools. The label tool allows for the creation and editing of text that doesn't require any special indentation or tabs. A word processing tool offers five levels of indentations for bullet charts or outlines, as well as tabs and decimal tabs. In both tools the size, font, color, and style of individual characters within a text object can be altered.

The spelling checker includes an 80,000-word dictionary that functions with all text objects. This is great news for anyone who's discovered a typo in the middle of a presentation. You can add words to your own dictionaries. Find and replace features are also available. We rate the text tools very good.

Since there are no graphing tools and drawing tools are limited, we had to rely on importing graphics, graphs, and complex drawings when creating slides for our sample presentation. To Microsoft's credit, Powerpoint accepts a wide range of import formats, including Mac Paint, PICT, PICT II, and Encapsulated Postscript files.

Powerpoint also comes with SmartScrap from Solutions Inc., which serves as a replacement for your system scrapbook and lets you maintain multiple scrapbooks and navigate through them conveniently. It also lets you copy as a group all of the slides from a Powerpoint presentation into a scrapbook.

Powerpoint also directly reads outlines

from More and Think Tank. This means you can create a rough presentation in More and import it to Powerpoint to instantly produce a slide show. To take full advantage of this feature, however, you'll have to either modify the way you create outlines or modify the final draft prior to importing it to Powerpoint. Given its capability to accept a wide range of file formats, plus More and Think Tank files, Powerpoint's data import capabilities rate a very good score.

Powerpoint's basic features are supplemented by a host of enhancements designed to let you make presentations more attractive. If you're a novice when it comes to using color, you may be a bit overwhelmed by the breadth of available choices. To assist in color selection, Powerpoint offers more than 5,000 predetermined color schemes designed by Geniographics color professionals. Once you select a scheme, its colors become available on the color menu.

Our favorite added feature is one that

allows you to gradually shade the background of slides. You can choose the color, the direction for shading (i.e., top to bottom, right to left), and the range of color intensity. In all, there are 45 ways that a background can be shaded using a given color. The 40 professionally designed templates that come with the package can also give you a big head start, as do the sample slide shows that are included. Powerpoint's enhancement options earn a very good rating.

Once you've completed a presentation, the output options are numerous. You can print in color using an ImageWriter II or choose from normal, gray scale, or inverse gray scale for output to a Laserwriter.

Powerpoint also supports printing to Tektronix 4693D and Postscript-compatible printers. It also supports Macintosh film recorders, including the Mirus Filmprinter, Presentation Technologies' Imagemaker, and Matrix's Slide Writer.

Microsoft is currently working with

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AYER

PRODUCT SUMMARY

Powerpoint

VERSION 2.0

Company: Microsoft Corp., 16011 N.E. 36th Way, P.O. Box 97017; Redmond, WA 98073-9717; (206) 882-8080.
List Price: \$395.

Requires: Macintosh Plus, SE, or Mac II with 1 megabyte of RAM, system 4.1 or later, and two 800K drives or hard disk.

Pros: Pre-designed color options and schemes; reads more files; includes SmartScrap and a spelling checker.

Cons: No direct connection to a slide-making service; no graphing options.

Summary: Powerpoint is limited when it comes to drawing and graphing options, but it boasts enhancement features unavailable from other desktop presentation packages that make for truly professional-looking slides.

● PRODUCT COMPARISON

Genographics to provide a full-service connection for Powerpoint users. A device driver is due out this fall that will enable Powerpoint files to be sent via modem to Genographics for slide or overhead production. For now, Powerpoint users can take advantage of the Genographics service at a discount, but they won't be able to get slides that are identical to their files.

On-screen slide shows can be set to run automatically or manually. If you want them to run automatically, you'll have to specify the number of seconds between each slide. A continuous repeat option can also be selected.

At this time, we rate output support good.

Powerpoint's manual is a beautiful, hardcover volume of 360 pages containing many helpful color and black-and-white illustrations. It describes the features of the program, provides a detailed tutorial, and serves as a good reference. Along with the comprehensive manual, three smaller books are included: a quick-reference guide, a guide to using Powerpoint's templates, and a book on using Genographics' services. A brief Smartmap manual is also included, but rate documentation very good.

Learning how to use Powerpoint is

comparable to learning about both an object-oriented drawing program and a simple word processor. If you have already dealt with either type of product, you will be ready to start creating presentations almost immediately. After referring to the manual and becoming familiar with a few new buttons (such as the slide and title sorters or slide changer and counter), novices can begin producing work in an hour or two. Ease of learning earns a very good score.

Powerpoint offers a slide master that allows you to set up items you want displayed on all slides. In this way, you just need to do a logo or common border once. You can modify the slide master after you've started your presentation or omit it for a given slide.

A define-styles option allows you to reuse the same font, size, color, and style combinations throughout your presentation. Every time you define a new style, it appears on the styles menu and can be selected via a keyboard shortcut.

Powerpoint offers some nice ease-of-use features. Because the program has no graphing capabilities, however, you must import files from other packages to add standard business charts to your slides. This extra step keeps the ease-of-use score to very good.

The only bug we encountered during our testing of Powerpoint concerned the way shadowed objects are printed on notes pages. Although the shadows ap-

pear correctly on the slides, they do not line up correctly on the Laserwriter. Overall, error handling gets a satisfactory rating.

Unlimited technical support is available, but calls are not toll free. Technicians are available from 6 a.m. to 6 p.m. Pacific time. Support policies are satisfactory.

The support staff we spoke to eventually answered our questions, but only after a few callbacks and several periods on hold. The quality of support varied, depending on the technician we spoke with. Overall, though, we consider the quality of technical support satisfactory.

Powerpoint sells for \$395. Although it lacks graphing capabilities and has only bare bones drawing tools, it allows for the direct importing of more files and offers color schemes and shading features not available in competing products. It is powerful, easy to use, and certain to grow under Microsoft's care. We consider it a good value.

STANDOUT VERSION 1.0

Standout, formerly known as Ready-Set-Show, was designed by Manhattan Graphics Corp. to help the people who brought us Rewind-Set-Go, a full-featured page layout program. This new product is now sold by Letraset and shows its

PRODUCT SUMMARY

Standout VERSION 1.0

Company: Letraset, 40 Eisenhower Drive, Paramus, NY 07653; (201) 845-6100.
List Price: \$395.

Requires: Macintosh Plus, SE, or Mac II with 1 megabyte of RAM and two 800K disk drives or a hard disk drive.

Pros: Excellent text handling tools; includes a spelling checker; wide variety of output options.

Cons: No shaded backgrounds; no integrated input from an outline.

Summary: Standout is a comprehensive desktop presentation package for a reasonable price. Its many features take more time to learn.

heritage through its powerful text editing features.

The basic line, rectangle, rounded rectangle, and oval tools are supplemented by tools for drawing triangles, diamonds, and parallelograms. Lines come in five different thicknesses and can be solid or dashed. Objects can be grouped and moved as a unit. Arrowheads can be placed on either end, and the shape of the arrowhead can be changed. Fill patterns that can also be used as fill patterns, and they have access to more

How We Tested the Desktop Presentation Packages

We tested all packages on a Mac II with 1 megabyte of RAM and Apple's color card and monitor.

We divided performance into seven categories: drawing tools, graphing tools, text tools, data import capabilities, enhancement options, presentation aids, and output support.

All three packages include at least a satisfactory set of drawing tools. Cricket Presents and Standout score higher because they go beyond the basic tools and add a host of other options designed to give users more flexibility when creating presentations.

Only Powerpoint has no graphing tools built into the package. Both Cricket Presents and Standout include all the common business-graphing options, in-

cluding bar, line, pie, and scatter charts. Each has a few extra options, earning good scores in this category.

Text tools cover the capability to create bullet and organization charts (offered in all three packages), as well as the degree of flexibility and control offered over input and placing of text. Among the features covered in the category are ruler options, control over spacing between characters, words, sentences, and paragraphs; tab choices; and a dictionary.

All the programs can accept files in Mac Paint, PICT, PICT II, and Encapsulated Postscript formats. This is sufficient to earn a good score.

Powerpoint is also capable of directly reading More outlines. For its part,

Standout's score gets a boost because of its capability of reading word processing Excel files.

Presentation aids cover speaker notes and audience handouts — features available in all three packages. Each earns a good score in this category.

Not surprisingly, all three programs are strong in the area of output support. Besides supporting the standard array of laser printers, the packages work with Macintosh film recorders. In addition, each program offers an on-screen slideshow feature. Bonuses are awarded for on-line connections to slide-show bureaus and the capability to do four-color separations.

The remaining categories follow our standard rules for scoring. Specifically:

Documentation scores reflect the quantity and quality of both written and on-line information, including error messages. At a minimum, documentation should describe the product and how to use it. Points are awarded for a quick-start guide, on-line tutorials, help programs, a quick-reference card, and a written tutorial. Poor organization, missing information, or an incomplete index lowers the score.

Ease of learning scores depend on the user interface and the intuitive design of the program. Factors influencing the score include the complexity of the program and the quality of documentation and tutorials. To earn a satisfactory, a program must be learnable by novices.

Like ease of learning, ease of use is in large part a function of the program's design and evaluates how easy the average user would find the program to use once the basics have been mastered. In the area of desktop presentation software, the availability and flexibility of templates boost the score.

Error handling consists of data integrity. To earn a satisfactory score, a program must prompt you to save files and shouldn't do anything to corrupt data or make it easy for you to lose information.

Packages that offer basic error messages get a satisfactory score in this area. Bonuses are awarded for programs whose error messages clearly explain the problem or, ideally, that suggest how to resolve the problem.

Support is divided into two areas: support policies and technical support. In scoring for support policies, we begin with a satisfactory score and award bonuses for product-usability warranties, money-back guarantees, a toll-free technical support line, and corporate extended support. We subtract points when vendors do not provide technical support or limit it to 30 or 90 days. Technical support scores are based on the quality of service we actually received in the course of multiple anonymous calls to the vendor and the availability of knowledgeable technicians.

Value scores reflect the price vs. the performance and features of each package tested, taking into account the competition.

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Avatar





Cricket Presents lets users control color and fill patterns as well as add a 3-D look to a presentation.

PRODUCT COMPARISON

than 16 million colors for each object. You can view a slide in double-size mode to make fine adjustments to your drawings, but there are no higher magnifications. Standout's drawing tools are very good.

Standout comes with a graphing tool that allows you to create simple business graphs within your presentations. You can choose from column, bar, line, scatter, and pie charts. You can't stack one series on top of another. Numbers in graphs may have comma separators, currency symbols, or scientific notation, even though true scientific graphs are not available.

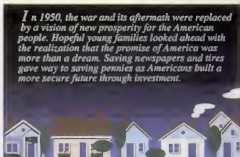
You may apply shadows to your graphs, but the result is not a true 3-D look. There are a variety of rulers and grid lines. You can place a legend in your slide or resize the graph after you've created it. Standout also features exploded pie charts. Standout's graphing tools earn a

Management

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Power

Powerpoint 2.0 can gradually shade the background of slides. Users choose the color and direction of shading.



Although Standout doesn't offer background shading, its text-handling capabilities are superior.

"Although it lacks graphing capabilities, Powerpoint offers color schemes and shading features not available in competing products."

good rating.

Standout features impressive text tools. As expected, you have control over the size, font, style, and color of individual characters. You also have full control over kerning among characters, words, lines, and paragraphs. This includes the capability to use subscripts and superscripts.

With the help of a complete set of tabs, you can set indents to facilitate outlining. You can also use any character as a tab leader, which goes beyond what some powerful word processors offer. The program's leader and trailer feature lets you accurately position characters before

or after a text block. This makes for attractive bullets or trailing punctuation marks.

To streamline the slide creation process, you can set up style sheets that allow you to specify all of the available text features. Standout also makes it easy to copy style sheet entries from one presentation to another.

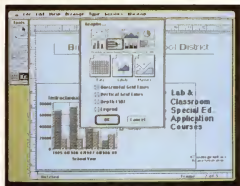
The spelling checker comes with a dictionary of 100,000 words. You can also add your own words to the dictionary. The program includes a find and replace feature (which works for text, font, style, and size), as well as the capability to define and summon glossary

entries. This last option means you can create your own abbreviations for commonly used words or phrases. There is also a rather unique feature that lets you change selected text from all uppercase to lowercase, initial caps, or caps only at the beginning of a sentence. By any standards, these are excellent text tools.

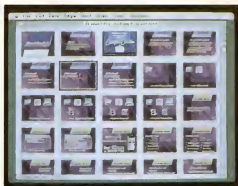
Standout accepts all of the basic graphic file types, including Mac Paint, PICT, PICT II, and Encapsulated Postscript. Standout can read ASCII text files and files from Mac Write, Microsoft Word, and Write Now. By resizing the text window you can control how much of the document will appear in the window. Finally, you can speed up chart creation since Standout can directly read Excel files. Because of its capability to handle this wide variety of formats, Standout earns a very good rating for data import.

One of Standout's more interesting enhancement features is the capability to add shadows to any object and accurately adjust its size, color, and location. You can also place a frame around any object





Cricket Presents features a variety of options for adding standard business graphs to presentations.



Powerpoint's slide sorter shows a miniature view of slides in the order they appear in a presentation.



Standout has a complete array of charting options and a comprehensive set of text tools.

and adjust its style and color. This is most useful for text blocks. With other presentation packages, you must create a separate object and then take the trouble of positioning it. Standout also includes fade-out and fade-in effects that can greatly enhance the appearance of on-screen slide shows. On balance, the program's enhancement options earn a good score.

Standout lets you adjust the size of your slides at any time during the creation of a presentation (although you may have to resize some of your objects to fit the new slide dimensions). You can adjust the area so the size and ratio of the output will conform to slides or overheads.

When ready to print, you can send output to all Apple printers, General Computer's Personal Laser Printer, the Tektronix 4693D Color Printer, Linotronic 100 and 300 typesetting systems, and all Mac film recorders, including those from Presentation Technologies, Mirus, Matrix, and Lasergraphics.

"One of Standout's interesting features is the capability to add shadows to any object and accurately adjust its size, color, and location."

Letraset recently announced an arrangement with Magicorp to provide on-line slide service for registered users of Standout. The service will take effect in mid-October. For a limited time, users will get a 50 percent discount on their first job; Magicorp charges a \$10 imaging fee and a \$5 fee for slide creation. Overnight service is also available.

One final feature in Standout we did not see in either Powerpoint or Cricket Presents involves the capability to print color separations for offset presses. Output support is very good.

Standout comes with a tutorial, a user manual, a design guide, and a quick-reference guide. There is also a supplement to the user manual. The index in the main user manual is especially helpful for quickly finding information. The quick-reference guide, on the other hand, is a bit too long (16 pages) and might be more useful if the pictures of keys were omitted. Still, the documentation includes all the information you'll need to learn the product, and it's written in a concise, easy-to-read fashion. We rate it very good.

The drawing and graphing tools are similar to those found in other packages and are easy to learn. The text tools are more comprehensive and as a result require more effort to understand. The icons for creating a new slide, duplicating a slide, or adding a template to a slide are not too intuitive, but there are no real barriers to learning the many features Standout offers. As a result, we rate ease of learning good.

Standout is relatively easy to use. Notable features that add to its ease of use are the cropping tools for imported graphics and the capability to automatically change text from upper- to lower-case.

After you become familiar with Standout's features, you can increase your productivity by adding your own slide templates to the Slide Design System. (Fifty templates are shipped with the package.) By clicking on an icon on the main screen, you can select an available template and add it to the slide you're

HIGH PERFORMANCE TO THE MACS.

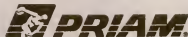
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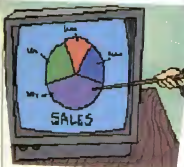
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PRODUCT COMPARISON



"Standout features impressive text tools. As expected, you have control over the size, font, style, and color of individual characters. You also have full control over kerning among characters, words, lines, and paragraphs."

working on. You can also duplicate the slide on the screen by clicking on another icon. As slides are created, numbered icons representing each slide appear at the top of the screen. You can go to any slide immediately just by clicking on the appropriate icon.

Our one criticism concerns the setup while you're entering data for slides: To see more than two columns at once, you have to hold down the Option key and press the left arrow, which is awkward and not intuitive.

In spite of this inconvenience, we rate Standout's ease of use good.

We found no real bugs while working with Standout, but a few quirks caused us a bit of confusion and required some effort to work around. One of these relates to the program's capability to run text around an object. If you're not careful, words will break in the middle (with no hyphen), depending on the size and location of the text block and the graphic object.

We were also puzzled at the results when we pasted in a piece of an Encapsulated Postscript file and added a background color. The background color showed through the graphic in some places but not in others. Eventually we realized this was caused by the way areas were filled when the graphic was created. We also discovered that pasted-in graphics can't be recolored.

A final problem occurred when we attempted to cut a single row of columns from the data used for creating a graph. The cut feature removed the data, but it left a blank cell that still appeared on the graph.

With no serious errors and only a few quirks, we rate error handling satisfactory.

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Executive Summary

All three products evaluated here offer reasonable alternatives for business presenters, so the one you select will depend on your work habits and the nature of the presentations you'll be producing. When making your buying decision, it's best to focus on what each product lacks.

If you rely on a spelling checker to avoid embarrassing errors in your output, then you may wish to stay away from Cricket Presents, the most expensive of the three packages we tested. Cricket does, however, have the best drawing and graphing tools and the most knowledgeable support staff.

If your presentations routinely involve business graphs, then Powerpoint 2.0 is not the best choice for you. If, however, you're an avid Mr. User, Powerpoint offers the most productive way to produce impressive presentations. Another compelling reason for using Powerpoint

involves its effective use of color. The color schemes and background shading capabilities let you create professional-looking slides with very little effort. Although the drawing tools earned the lowest rating, they are adequate for most uses.

In many ways, Standout provides the best compromise of color and shading capabilities but can't draw outline files directly, but its list of other features is impressive. It has the spelling checker Cricket Presents lacks and the graphing tools not found in Powerpoint. Its drawing tools are more complete than Powerpoint's (although not as good as those available in Cricket Presents). Standout is also the product of choice if you need to fine-tune the spacing between characters, words, lines, and paragraphs. Its formatting tools are clearly the best, although they may seem a bit complicated at first.

Letraset provides unlimited and toll-free technical support for the first year after purchasing the package. Support policies are satisfactory.

Our first encounter with the support line was not encouraging. Standout had just been acquired by Letraset, and the support staff was not familiar with the product. By mid-August, however, the general staff was much more knowledgeable about the product, and a member of the original design team had been added to the Letraset staff. Given the improved service and the quality of support we received, we rate Standout's technical support good.

When Letraset bought the package

from Manhattan Graphics, it dropped the price \$100, to \$395.

Standout is currently the only desktop presentation package that offers both a graphing tool and a spelling checker. It also has text-handling capabilities that surpass the competition and approach those found in desktop publishing applications.

On the downside, the program does not have the complete graphic tools offered by Cricket Presents, nor does Standout have the shaded backgrounds, color schemes, and Mode compatibility of Powerpoint.

Overall, we consider Standout a good value. □

REPORT CARD

DESKTOP PRESENTATION SOFTWARE

		Cricket Presents 1.0 (Weighting)	Powerpoint 2.0	Standout 1.0
Performance				
Drawing tools	(50)	Excellent	Satisfactory	Very Good
Graphing tools	(50)	Good	N/A	Good
Text tools	(50)	Very Good	Very Good	Excellent
Data import	(75)	Good	Very Good	Very Good
Enhancement options	(50)	Good	Very Good	Good
Presentation aids	(25)	Good	Good	Good
Output support	(100)	Very Good	Good	Very Good
Documentation				
Documentation	(125)	Good	Very Good	Very Good
Ease of learning				
Ease of learning	(100)	Very Good	Very Good	Good
Ease of use				
Ease of use	(100)	Good	Very Good	Good
Error handling				
Error handling	(75)	Satisfactory	Satisfactory	Satisfactory
Support				
Support policies	(50)	Satisfactory	Satisfactory	Satisfactory
Technical support	(50)	Very Good	Satisfactory	Good
Value				
Value	(100)	Satisfactory	Good	Good
Final scores		6.5	6.2	6.7

GUIDE TO REPORT CARD SCORES

InfoWorld gives ratings to finished production versions of products only, never to beta test versions.

Products receive ratings ranging from unacceptable to excellent in various categories. Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.
Very Good = 0.75 — Meets all essential criteria and offers significant advantages.
Good = 0.625 — Meets essential criteria

and includes some special features.

Satisfactory = 0.5 — Meets essential criteria.

Poor = 0.25 — Falls short in essential areas.

Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 point of one another differ little.

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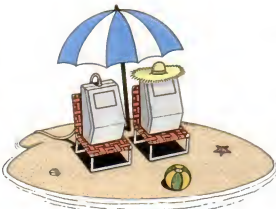
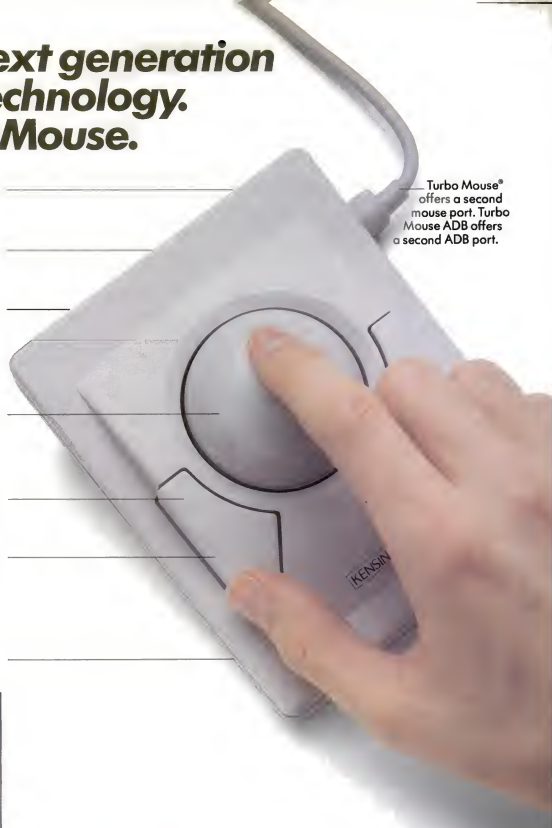
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The Technology Show

By George Morrow

Software Licensing Agreements Mimic Early Days of Recording Industry

In the recording industry, software refers to entertainment material on disks, tapes, and records. Maybe it's my computer background, but I've always felt this terminology was strange — until just recently.

I collect old 78 records — some that go back before World War I. While cataloging a batch of early Victor recordings, I ran across an exceptionally well-preserved record sleeve. And as I admired it, the license agreement on the front caught my eye:

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The sound recording contained in this envelope is manufactured by us under our patents hereinafter noted, and is licensed in the U.S.A. for use only, for the term of the patent hereinafter noted having the longest term to run, and only with talking machines and sound boxes manufactured by us; and our machines and sound boxes are only licensed for use with our records. Only the right to use the said record is granted to Victor distributors and dealers for demonstrating purposes, with the right to the distributor to assign a like right to regularly licensed Victor dealers at the dealers' regular discount royalty, with the right to the dealers to convey the license to the public to use the said record only when a royalty of not less than the license royalty noted on the record itself shall have been paid, and upon consideration that all of the conditions of license shall be strictly observed. A similar right is also granted to the distributor to convey to the public the right to use the record under the same conditions. No license to use this record is granted to the public until the full royalty shall have been paid. This record is not licensed for use for public entertainment for profit: For a license for such public use an extra license fee of 10 percent of the full royalty shall be payable. Title shall remain in the Victor Talking Machine Company; also the right to repass the said patented goods upon the breach of any of the conditions upon the repayment by the Victor Company to the user of the royalty paid by him, less 10 percent per annum of the list royalty for each year, or fraction of a year, the user shall have had use thereof. This record is licensed only for the purpose of reproducing sound directly from the record, and for no other purpose. Any attempt at copying, or counterfeiting, this record will be construed as a violation of the said patent rights and conditions. All patent rights are reserved to the licensor except those hereby granted to the licensees upon the performance of the conditions noted. Any excess use, or violation of the conditions, will be an infringement of the said patents. The patents under which this record is manufactured and licensed for use are, among others, as follows: No. 739,318, issued September 22, 1903; No. 778,976, issued January 3, 1905; No. 896,059, issued August 11, 1908; and other U.S. patents under which this record is manufactured.

This record at the expiration of the patent having the longest term to run, under which it is licensed, shall become the

George Morrow is a hardware designer and consultant who has spent 15 years in the microcomputer industry. The views expressed are his own.

property of the licensee [the record being then free of the patents the subject matter of the license], provided that the licensee shall have faithfully observed the conditions of the license, and the Victor Company shall not have previously taken possession of the record as herein provided.

An acceptance of this record is an acceptance of these conditions.

All rights revert to the undersigned in the event of violation.

January 1, 1915 Victor Talking Ma-

chine Company, Camden, NJ.

With some relatively minor changes, this license notice would be indistinguishable from statements that appear on many software packages today. Licensing agreements, however, aren't the only link between the recording industry of 1915 and the current microcomputer industry.

Fighting over patents, phonograph companies clogged the dockets of the federal court system between 1903 and

1912. Most of these companies went bankrupt. And of the three that did survive — Edison, Columbia and Victor — each had to use equity to satisfy legal fees.

It will be interesting to see how much history repeats itself in this instance. What we need to do is heed George Santayana's dictum:

"Progress, far from consisting in change, depends on retentiveness . . . Those who cannot remember the past are condemned to fulfill it."

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Product Comparison

4 Pascals
FOR DOSBy John Walkenbach *Contributing Editor*

Although C has become the high-level language of choice among professional microcomputer programmers, there is still a considerable contingent of dedicated and vocal Pascal users. Pascal's appeal stems from its relative simplicity, inherent elegance, and the readability of its source code.

Originally developed as a language to teach programming, Pascal has evolved into a more serious language suitable for a variety of real-world applications.

As Pascal evolved and became more popular, the confusing issue of a "standard" Pascal arose. ISO, the International Standards Organization, defined a standard that was workable but limited. Consequently, nearly all Pascal compilers include language extensions and enhancements. While this makes programming easier and allows Pascal programs to perform otherwise impossible jobs, it also means that a program written to use the extensions available for a specific compiler will probably need modifications before it will run on other compilers.

Perhaps the most significant event in microcomputer Pascal occurred in 1983, when Borland International released Turbo Pascal — an extraordinary compiler noted for its lightning compilation speed, compact code, integrated editing environment, and bargain basement price. The product gained widespread acceptance and is largely responsible for the continued popularity of Pascal.

This product comparison examines four leading Pascal compilers for PCs: Borland's Turbo Pascal, Metaware's Professional Pascal, Microsoft Pascal, and Oregon Software's Pascal-2. We've assumed that the potential user of these products is an experienced PC user with some programming experience — but not necessarily a professional programmer. In other words, if you are thinking of purchasing a compiler to develop small to medium-size business-oriented programs, this comparison is for you.

These are complex products, and our scorecards are, admittedly, somewhat subjective. The relative weights were determined based on interviews with Pascal users, and they may or may not conform to your priorities in a compiler. As always, we urge you to assign different weights to the attributes if you don't agree with ours. In some cases, this will change the final scores significantly.

Some scores are shared by all four compilers, so we won't discuss them in the product write-ups. Execution speeds based on our benchmark program were

fairly comparable, and all earn scores of very good. All compilers handle user errors well and get very good scores. Likewise, we had no trouble getting through on the telephone to knowledgeable technicians at any of these companies, and we awarded them all very good scores for technical support.

PRODUCTS REVIEWED

Borland Turbo Pascal.....	50
Metaware Professional Pascal	54
Microsoft Pascal	57
Oregon Software Pascal-2.....	60
InfoWorld Report Card	60
Executive Summary	60



BORLAND'S TURBO PASCAL, VERSION 4.0

Turbo Pascal has come a long way since Version 1.0, and total sales of the product are claimed to exceed one million copies — making it the most popular PC language product short of Basic.

Version 4.0 removes the previous 64K limit on program size, making Turbo Pascal a viable option even for large-scale program development.

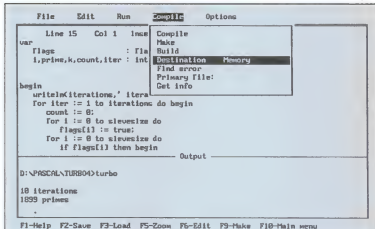
After working with Turbo, it's difficult to go back to other products that use the more traditional four-stage edit/compile/link/execute process. In Turbo, these steps are all performed within an integrated environment based on a slick pull-down menu system, complete with context-sensitive help. Pressing one key within the editor will compile, link, and execute your program. If there is a compile-time syntax error, you are returned to the editor at the offending character with an error message. Turbo Pascal will even do this for run-time

errors, if you wish. While this feature is handy, sometimes we would like the option of having all syntax errors identified before we get bounced back to the editor.

The editor uses Wordstar-like commands (which you can modify), and you can even split the window so you can see your source code and its output at the same time.

Turbo is a single-pass compiler that produces EXE files; you can compile either to RAM or disk. Version 4.0 has a linking step that's integrated into the compile command. It lets you combine into your program previously compiled modules as well as assembly language modules. In addition to its integrated environment, Borland also supplies a more traditional command-line compiler, as well as a highly automatic Make utility that is integrated into the programming environment. (A Make utility ensures your compiled program uses the most recent versions of all associated files.) For its programming environment, Turbo Pascal 4.0 rates a score of excellent.

Turbo Pascal is quite liberal in lan-



In the new Turbo Pascal, pressing one key will compile, link, and execute your program.

guage extensions and includes a library of seven predefined units, which are roughly analogous to object libraries. The units are called System, Printer, Crt, Dos, Graph, Turbo3, and Graph3. The

last two are provided for converting Version 3.0 programs, since Version 4.0 is not directly compatible with previous versions. You have full control over screen writing, independent of the

How We Tested and Scored Pascal Compilers

For this comparison we devised a new report card for programming languages. The Performance category takes into account six factors.

Programming Environment. This refers to the general environment in which

the programmer operates, and takes into account the degree to which the editing, compiling, and linking functions work together. Traditional products that use multistep command-line procedures scored satisfactory. If these functions are

integrated into a single step, a score of very good was awarded. Products received a score of excellent for compilers with a smoothly and completely integrated environment.

Language Extensions/Libraries.

This subcategory takes into account Pascal language extensions provided with the compiler, as well as supporting function and procedure libraries. A satisfactory score was given for standard extensions and basic libraries. A very good required significantly more extensions and additional libraries. To earn an excellent score, the product must directly support graphics and screen handling functions.

Compatibility. The products were evaluated against ISO standards by BSI Quality Assurance. A poor was given for products that could not be made to do reasonably well in the BSI Validation test suites. A very good was awarded if the compiler included an option to flag nonstandard functions and if the compiler could pass a fair number of the BSI tests. An excellent score required complete ISO compatibility. Support for other hardware and operating systems was taken into account as well, and some compilers scored higher for that reason.

Debugging. A score of very good required some form of source level debugging included with the purchase price. Bonus points were awarded if the debugger stood out in some significant way. The lack of a debugger was a significant drawback.

Compiler Speed/Performance. This category took into account compilation speed on our benchmarks as well as additional features found in the compiler. Speed was scored relative to the other products in this comparison. Bonus points were awarded for additional useful compiler features.

Execution Speed. Scoring in this category was based on our benchmark results (the DES2 encryption program). Since all products came in with generally comparable times, all were awarded scores of very good.

The remaining categories follow our standard rules for scoring.

Documentation scores reflect the

quantity and quality of both written and on-line information. At a minimum, documentation should describe the language and the compiler specifics. Bonus points are awarded for a quick-start guide, on-line tutorial and help programs, a quick-reference card, and a written tutorial.

Ease of learning scores depend on the user interface and the intuitive design of the compilers. Other factors that influence this score include the complexity of the system, and the quality of documentation and tutorials. To earn a satisfactory program must be learnable by the average user, which we define as someone with working knowledge of Pascal.

Ease of use is in large part a function of the program's design, and it evaluates how easy the average user would find the program to use once the basics have been mastered. An easy-to-follow menu system is a plus, but a clear command-line interface is satisfactory for a compiler. An integrated programming editor also helps the score here.

Error handling consists of two components: data integrity and error messages. To earn a satisfactory score, a program must catch standard syntax errors; error messages should explain clearly the source of the problem. A compiler that returns you to the editor with the cursor on the offending statement earns extra points.

Support is divided into two areas: support policies and technical support. In scoring for support policies, we begin with a satisfactory score and award bonuses for usability warranties, money-back guarantees, and corporate extended support; we subtract points when vendors provide no technical support or limit the support to 30 or 90 days. Technical support scores are based on the quality of service we received during anonymous calls to the vendor and the availability of knowledgeable technicians. A toll-free line boosts the score.

Value scores reflect the price vs. the performance and features of each package tested, taking into account the competition.

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To Standardize or Not to Standardize: Is That the Question?

The computer industry has two kinds of standards: de facto standards, which are created simply by the weight of their presence, and formal standards, which are defined by an organization in hopes of holding off the emergence of de facto standards. Some of the organizations setting standards are the International Standards Organization, ANSI, and IEEE.

Ada, a programming language primarily used by the Department of Defense, was designed from a standard. It is a rare example of standardization proceeding in the logical manner: standard first, then implementation.

Pascal is an example of an implementation that later had a standard set for it. Nicklaus Wirth designed the language in the early 1970s. The standardization process began later that decade, with a formal British standard being started in 1982. An ISO standard followed a year later.

Why is standardization an issue? Picture this: The expensive Pascal program custom-written for your office was the salvation of your business, but it runs on an old computer under CP/M and takes four hours to generate reports. So, after a reappraisal of needs, management decides to get a more powerful machine. Unfortunately, the new computer uses a different operating system (say, MS-DOS), and your Pascal compiler vendor is no longer around or doesn't offer a compiler for the new platform.

Without standards, after buying a third-party compiler for the new system and taking the old source code, you'd still have to rewrite the source code to fit the syntax of the new compiler before your program would be ready to execute. Standards (or the lack of them) can make a sizable impact on your business.

Fortunately, there are companies staffed by very picky people who make a living checking that languages conform to standards. One such organization is BSI Quality Assurance. This firm has designed validation suites for many languages, Pascal among them. Its Pascal Validation Suite consists of several hundred programs that test a compiler for conformance to the ISO standard. The suite also contains purposeful mistakes, logical errors, and strange data types—the idea being to strain a compiler's capabilities and to make sure the compiler catches code that does not conform to the standard. BSI has given its stamp of approval to over 60 Pascal compilers, but only two of these run on MS-DOS. (One of these, Oregon Software's Pascal-2, is reviewed here.)

Even if a defined standard exists, as

*Notes from
the Test Center*

one does for Pascal, it is possible that vendors may sidestep the issue if they have had success with their own "standards." Such is the case with Borland's Turbo Pascal. This package has tremendous market penetration, but it deviates so far from the ISO Pascal standard that it doesn't come close to earning BSI validation. Should this matter? The answer depends, as always, on your needs. If you are going to limit your Pascal-developed code to MS-DOS machines, it won't be an issue, and Borland's Pascal is a very good choice. However, if you think you may want to port your application to a non-MS-DOS machine, such as a minicomputer or a mainframe, forget Borland. You'll want a compiler that adheres more closely to the formal standard.

— Dave Chalmers
Test Center Technician

THE VALIDATOR'S VIEW:

Our Pascal Validation Suite (PVS) currently contains more than 20,000 lines of code, divided into 770 tests. A compiler must pass more than 500 of these tests to get a Class A Validation certificate. The PVS has been available to compiler manufacturers for many years, and each vendor in this comparison has at least one of the 11 major releases of the test suite. Most have purchased almost every release.

Only one of the compilers tested for this comparison earned the Class A Validation. We were surprised by both the magnitude and the specifics of how the other three compilers failed our tests. Each of these failed at least one conformance test for Assignment or Type compatibility, and they all failed some of the Scope tests. These are fundamental failures, not just bugs. There is evidence that some failures are deliberate, as they seem to result from compiler design being sacrificed for other qualities such as speed or graphics support.

It gets worse: All three nonconforming compilers exhibit some very ungraceful failures. As part of the test suite, we run "deviance tests" that should cause the compilers to abort

compilation with an error condition. In many cases these compilers did not catch the errors, and the resulting compiled programs crashed our PCs—and these were only the obvious failures.

More than 60 Pascal compilers have now been validated, on everything from tiny 8-bit microcomputers to CDC and Cray supercomputers. In the MS-DOS world there are only two validated compilers: Pascal-2 by Oregon Software and Pro-Pascal 3.1 by Prospero Software. If standard Pascal can be implemented properly on an 8-bit microcomputer (we've validated three compilers for this platform), we would expect similar conformance from the "big" compilers.

All three nonconformist implementations have failed to implement some features of Standard Pascal. Pascal, it must be emphasized, can be fully implemented on an 8-bit microcomputer with 32K of RAM. So why are features missing? One wonders.

— John Souter, Head of Schemes
BSI Quality Assurance

Test reports for the reviewed compilers and others are available for a fee from BSI Quality Assurance, P.O. Box 375, Milton Keynes MK14 6LL, United Kingdom. Tel: 0908-220908. Telex: 827GB2BSI QAS G. Fax: 0908-320856.

BORLAND ON STANDARDS:

We asked Borland how it responds to criticism of its very nonstandard yet best-selling Turbo Pascal.

More than a million people have chosen Turbo Pascal as the de facto Pascal programming tool. The computer industry and its customers have in this case shown software usability and power to be paramount over strict conformance with a standard. Programmers have cast their votes for an extended language with powerful features that will let real-world applications be designed, written, and debugged easily and efficiently.

It's unfortunate for Pascal users that the ANSI/ISO Pascal standard does not address such essential features as modular programming, random-access files, and dynamic-length strings—or the capability to call functions from pointers, create interrupts, and make use of new data types such as Shortint. These are all features that are crucial to modern-day applications.

Borland has included these capabilities within Version 5.0 of Turbo Pascal, along with an integrated environment comprising a built-in source-level debugger, compiler, and editor. Where the original specification for Pascal was designed for educational purposes, we have extended it to make it a powerful language for programmer productivity.

What we've done with Turbo Pascal reflects what we believe to be the best possible Pascal implementation for programmers today. We believe in the ultimate suitability of Pascal for many microcomputer programming tasks and consider it our role to advance Pascal programming language technology because of our responsibility to this vast user community.

— Robin Shepherd
Director of Public Relations
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BSI PASCAL VALIDATION SUITE DETAILS

Compiler	Percentage of Tests Passed		
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Oregon Software Pascal-2.1m	100	99	99
Metaware Pascal 2.7	95	88	91
Microsoft Pascal 4.0	91	78	84
Borland Turbo Pascal 4.0	67	75	72

BSI performs 770 tests for each compiler. The results for about 500 of those tests are reflected in this chart.

¹ Conformance tests: A compiler passes these tests if it correctly compiles the code.

² Deviance tests: A compiler passes if it correctly refuses to compile this code.

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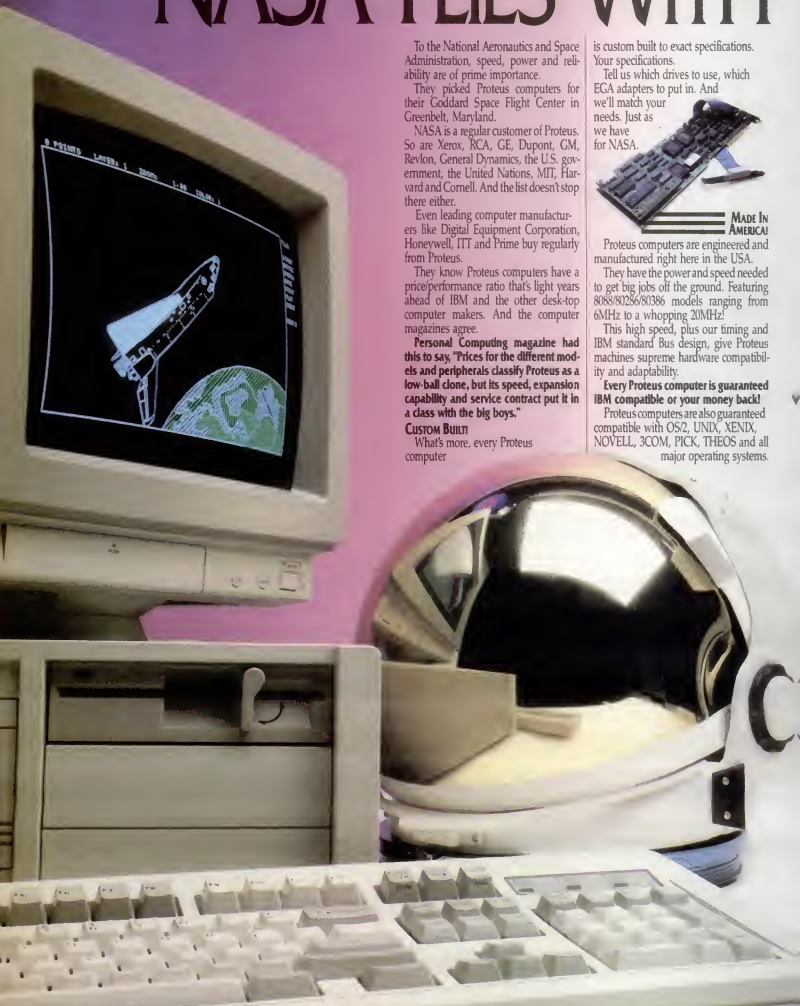
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Proteus
THE INTELLIGENT CONCLUSION!

Ansı.sys device driver.

If you are interested in programming graphics in Pascal, Turbo Pascal is just the ticket. It provides drivers for seven common graphics hardware systems, allowing you to write machine-independent graphics programs. You can include the drivers in your compiled program or distribute the drivers to users of your program (as permitted by the Turbo license). In short, Turbo provides everything needed to develop professional-quality programs for PCs. For language extensions and libraries, we give it an excellent score.

With regard to standard Pascal, Turbo is the least compatible of the compilers we tested. For example, it doesn't include standard functions such as Get, Put, Pack and Unpack; and procedures and functions cannot accept other procedures and

functions as arguments. Furthermore, its implementation of some other functions do not adhere to the ANSI or ISO standards. Turbo Pascal is available only for MS-DOS and Macintosh systems and is not recommended if you plan to port your programs to other hardware. For compatibility, its performance on the BSI test suite hurts the score, but the availability of a Macintosh version holds the score to satisfactory.

Perhaps the main component missing in Turbo Pascal is a source code debugger. However, the new version produces files that are compatible with commercial debuggers such as Periscope, but it does not work with Microsoft's Code-view. For debugging, you'll usually have to resort to the old-fashioned method of placing additional Write statements in your program to monitor the status of

PRODUCT SUMMARY

TURBO PASCAL

VERSION 4.0

Company: Borland International, 1800 Green Hills Road, Scotts Valley, CA 95066; (408) 438-8400.

List Price: \$99.95.

Requires: IBM PC, AT, PS/2, or compatible; MS-DOS 2.0 or later; 384K of RAM; two floppy drives (command line compiler requires 256K and one floppy).

Pros: Integrated edit/compile environment; very fast; easy to learn and use.

Cons: No source code debugger; no option to get a listing with all syntax errors flagged.

Summary: An accessible Pascal compiler based on an easy-to-use integrated environment, ideal for learning Pascal but can also be used for large-scale program development.

selected variables. Debugging is poor. Version 5.0 should be better, as it is scheduled to include Borland's new Turbo Debugger.

For speed of compilation, Turbo makes the others look like they're standing still. While a minute or two may not seem like much, if you like to see the results of your work quickly, every second counts. Turbo also produces the most compact EXE files, which will be important to developers of large applications. Turbo deserves its excellent rating for compile speed and performance.

Turbo's well-documented and includes many sample files to demonstrate the its various functions and features. The manual is easy to read and includes numerous examples of code. The product also features context-sensitive on-line help for both the editor and compiler. If your cursor is on a library identifier (for example, Writeln or Window), the help screen will give you information on the specific function or procedure. We rate documentation excellent.

Like the other products reviewed here, the manual is not intended as a tutorial for learning Pascal programming. It does, however, thoroughly cover all facets of using the editor and compiler, and the reference section is organized well. Pull-down menus and help screens make this the easiest to learn among these compilers, and we rate it excellent.

For sheer ease of use and accessibility, Turbo Pascal is also the hands-down winner among the compilers. Its integrated edit/compile environment contrasts sharply with the traditional command line method used by other compilers and is a breeze for both novice and advanced programmers. The availability of its units save a lot of programming time, and tons of Turbo source code is readily available from bulletin boards and third-party suppliers. Its fast compilation makes Turbo seem more like an interpreter than a compiler, especially for small programs. This translates to more efficient program development. It earns an excellent score for ease of use.

In addition to free (but not toll-free) telephone support, a user bulletin board is also available, as well as a magazine and special corporate support. An additional Turbo Tutorial is available (\$70), as well as several toolboxes for the language, covering graphics, database, numerical analysis, an editor, and games. Each toolbox contains programs and routines designed to simplify development of specific types of programs. These cost \$99 each, or \$395 for the bunch (including the tutorial). Borland has always been reasonable in providing low-cost upgrades for new versions. Support policies are very good.

Turbo Pascal, Version 5.0 was announced as this report was being written. The new release purportedly will include a source-level debugger and support for the new stand-alone Turbo Debugger. Other new features include an overlay manager with EMS support, 8087 math coprocessor emulation in software, VGA and 8514 graphics support, and an enhanced Smart Linker that will strip both unneeded code and data from your programs.

Priced at just under \$100, Turbo Pascal is a bargain by any measure. We rate it an excellent value.

METAWARE'S PROFESSIONAL PASCAL, VERSION 2.7

This product's name describes its orientation. The compiler is clearly de-

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signed for professional programmers working on large-scale projects and is not recommended for beginners. Professional Pascal is available in two MS-DOS versions: regular and 80386. Here, we

test only the regular version.

Metaware doesn't provide an editor, so you'll need to supply your own. The product uses the standard (separate) compile and link steps. There's nothing

special about the programming environment for Professional Pascal, and it earns a satisfactory rating.

Professional Pascal has many language extensions and devotes an entire manual to discussing them. It borrows the concept of "pragmas" from Ada. Pragmas direct the operation of the compiler, including things such as listing control, "include" files, generation of debug information, and so on. Several other handy extensions include iterated For loops, a Cycle statement, and the capability to include variable and type declarations at any point in the program. You can even define your own operators. For example, you can write a function to raise a number to a power and call it "****". Thereafter, you can calculate an exponent with an expression such as x^{***} .

Noticeably missing from Professional Pascal are extensions or routines for screen handling and graphics. It's

assumed programmers will develop their own routines for these functions. This omission is offset by the compiler's other features, and it gets a good score for language extensions and libraries.

You can link Professional Pascal programs with Metaware's High C language as well as with assembly language programs. The compiler can also call routines written in many other languages, such as Microsoft C, or even some versions of Fortran. You can tell the compiler to conform to the ISO/ANSI standard; doing so will flag any nonstandard statements. The compiler is also available for other systems, including VAX, Sun, and Apollo systems, as well as the 80386 version. No Macintosh version is available. For compatibility, we rate it very good.

The product doesn't include a source-level debugger, but it can be used with stand-alone debugging programs, including Microsoft's Codeview. The require-

FEATURE COMPARISON CHART
PASCAL COMPILERS

■ Feature □ No Feature	Borland Turbo Pascal 4.0	Metaware Pascal 2.7	Microsoft Pascal 4.0	Oregon Pascal-2 2.1M
Includes editor	■	□	■	□
Integrated programming environment	■	□	■	□
Separate link step	□	■	■	■
Produces .OBJ files	□	■	■	■
Source-level debugger	□	□	■	■
Writes OS/2 programs	□	□	■	■
Math coprocessor support	■	■	■	■
Graphics library	■	□	□	□
Screen handling library	■	□	□	■
Access other languages	Assembler C	High C Assembler others	Microsoft languages C, Basic, Fortran Assembler	Microsoft C, Pascal, Fortran Assembler
File sharing/record locking	□	□	■	■
User bulletin board	■	□	■	■
MAKE utility	■	□	■	□
Profiles speed bottlenecks	□	□	□	■
Procedural cross-ref list	□	■	□	■
Source code formatter	□	□	□	■
Other implementations	Macintosh	VAX, IBM 370 IBM RT, MC680000 others	OS/2 (included)	VAX, PDP, Apollo, Sun MC68000
Price	\$99.95	\$595	\$300	\$229

FEATURE COMPARISON CHART
PASCAL COMPILERS

Test	Borland Turbo Pascal 4.0	Metaware Pascal 2.7	Microsoft Pascal 4.0	Oregon Pascal-2 2.1M
DES program				
Compile time	1	27	30	37
Link time	n/a ¹	3 ²	2 ³	3 ²
Execution time	12	11	12	15
Adventure program				
Compile time	1	26	43	34
Link time	n/a ¹	3 ²	2 ³	3 ²

Programs were compiled and run on an 8-MHz IBM AT with 640K of RAM and a hard disk. Times are reported in seconds. The DES program encrypts and decrypts text according to the U.S. Government's DES algorithm. It is a heavily math-intensive and text-intensive program. The Adventure test is a game application, which is even more text-intensive.

¹ Borland's Pascal requires no link step.

² Linker: Microsoft, Version 5.64.

³ Linker: Microsoft, Version 5.01.21.

PRODUCT SUMMARY

PROFESSIONAL PASCAL

VERSION 2.7

Company: Metaware Inc., 903 Pacific Ave., Suite 201, Santa Cruz, CA 95060; (408) 429-6382.

List Price: \$595 (for single-user MS-DOS; other packages available).

Requires: IBM PC, AT, PS/2, or compatible; MS-DOS 2.0 or later; 320K of RAM; hard disk.

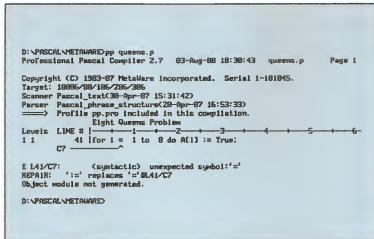
Pros: Versions available for other systems; many powerful extensions.

Cons: No editor or debugger; no screen handling or graphics procedures included.

Summary: A high-quality Pascal compiler designed for large, professional programming applications.

ment to purchase an additional program for debugging drops the rating to poor.

Compilation speed is generally a bit faster than MS Pascal and Pascal-2, but much slower than Turbo. This alone would qualify Professional Pascal for a score of satisfactory for compiler performance, but the product also offers significant bonuses in this category. For example, you can request a comprehensive listing that details errors as well as the repairs attempted. In addition, Professional Pascal flags names that were declared but not used. If you like, you can even get an assembler listing of the code generated by the compiler, complete with your source code interspersed as comments. The manual provides an extensive list of optimizations performed during compilation — a fair trade-off for



Metaware's Pascal compiler will perform rudimentary repairs on source code.

compiler speed. We rate Professional Pascal very good for compiler speed and performance.

Documentation consists of three manuals: an installation guide, a programmer's guide, and a language extensions manual. A programmer's primer is also included — a nice touch. All four are packaged in a single three-ring binder. Particularly noteworthy is the keyword-in-context index provided for each manual. Despite the primer, the product assumes you know what you're doing, and this is reflected in the documentation. Considering its target audience, the documentation is satisfactory.

Ease of learning for this program is

satisfactory. It provides no special aids to get you up and running, nor does it get in your way as you climb the learning curve.

You get several sample program files to demonstrate some of the product's features. Also included is the DOS Helper — a collection of Unix-like utilities (Fgrep, Tar, and Find, for example), which provide some useful features. We rate the ease of use for Professional Pascal good.

Metaware provides free upgrades to new versions or releases for three months, and free telephone support is provided for six months. Both periods may be extended for one year for an additional 10 percent of the price at the

time of purchase. Special corporate support is available. Metaware support will provide a host of additional software tools, including OS/2 support libraries. A multiuser license for the compiler is available. Support policies rate a score of satisfactory.

Professional Pascal is not recommended for the beginner or novice Pascal user. Its advantages can be seen in large-scale program development — especially for programs that will be ported to other systems. Priced at \$595, Professional Pascal is the most expensive of these four compilers. It's a solid product, however, and a very good value.

MICROSOFT PASCAL,
VERSION 4.0

Microsoft's Pascal is the only Pascal compiler available that lets you write programs to run under OS/2. In fact, you can write programs for DOS only (tested), OS/2 only, or both.

The product comes with a copy of the Microsoft Editor — a powerful editor that is not easy to learn. It has macros so you can mimic the commands of other editors such as Wordstar or Brief, and it also has substantial undo capabilities. The strong-willed can even write their own extensions to this editor in Microsoft's C language. A plus is that you can compile and link programs without leaving the editor.

Compiling an MS Pascal program requires two or three passes in addition to the link step. The last pass is optional,

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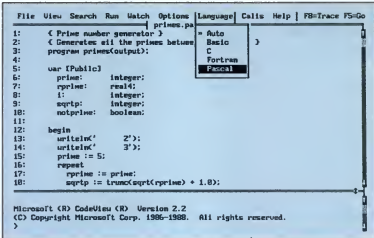
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Product Comparison

and it is necessary only if you require an object-code listing. New with the current release is an additional program called **PL.EXE** that lets you perform all passes (including linking) in a single step. MS Pascal comes with several handy utilities, including a Make program, an EXE file-packing utility, and a program to increase DOS's environment space. The programming environment isn't as convenient as Turbo Pascal's, but it's significantly better than the other two products reviewed here. We rate it very good.

MS Pascal comes with an extensive set of libraries and supports separately compiled units. It lacks direct support for graphics or direct screen support, however. It has most of the common language extensions, including super arrays (variable-length arrays whose declaration permits passing arrays of different lengths), and it also supports dynamic allocation of array lengths (if you pass an array to a procedure, the lengths of the arrays don't have to match). For language extensions and libraries, MS Pascal is very good.

MS Pascal has three levels: standard, extend, and system. The standard level conforms to ISO standards and includes only a few minor extensions. The extend



The Microsoft Pascal compiler is the only one tested with built-in OS/2 support.

level includes many more relatively safe extensions to the ISO standard. The system level includes all extend-level extensions as well as machine-oriented extensions. Nonetheless, even with the standard switch on, this compiler didn't score too highly in the BSI standardization test suite. But this is the only product reviewed here that runs under OS/2, which raises the compatibility score to very good.

A copy of Microsoft's Codeview debugger is included with the product. This is an easy-to-use source-level debugger that was upgraded recently to work with MS Pascal (in addition to C, Fortran, Basic, and Assembler). Codeview is a slick debugging environment with a Windows-like user interface. It allows you to track down logical errors in your programs by stepping through your source code or assembly code. You can set break points and monitor the status of selected variables. A plus for OS/2 users is that the product is protected from ill-behaved Pascal programs: No matter how close to the machine your program gets, Microsoft claims you won't be able

to crash the debugger. Best of all, Codeview is easy to learn and use. Debugging is excellent.

Our benchmarks tests place MS Pascal pretty close to Pascal-2 and Professional Pascal in compile times, earning a score of satisfactory.

Documentation consists of three binders containing several separate manuals: a compiler user's guide, a reference manual, a programming guide for using mixed languages, a Codeview manual, an editor's manual, and separate sections for several utility programs. The documentation is identical to that for Version 3.3, but new sections have been added to cover the features in the latest version. This may be efficient for Microsoft, but it makes it difficult on the user, who must remember to refer to the update sections to make sure something hasn't changed. But apart from this, the books are thorough, and Codeview's debugger has good on-line help. The patch languages let you escape these constraints and lowers an otherwise strong documentation score to satisfactory.

PRODUCT SUMMARY

MICROSOFT PASCAL

VERSION 4.0

Company: Microsoft Corp., 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073; (206) 882-8080.

List Price: \$300.

Requires: IBM PC, AT, PS/2, or compatible; MS-DOS 2.1 or later; OS/2 1.0 or later; 320K of RAM (\$12K recommended for two floppy disk drives).

Pros: Includes editor and excellent Codeview debugger; supports program development for OS/2.

Cons: Scattered documentation.

Summary: A strong Pascal compiler that's highly compatible with Microsoft's other languages.

Why I Like Pascal

By Bob Wallace

Which language should you use for system programming: Pascal or C? There's certainly no question that C is the choice of the masses at this time. But I like Pascal, and I'll tell you why. Before I do, however, let me show you that neither is better in any objective sense.

If either language were more powerful or efficient, the choice would be obvious. But any good language designer will add features and code optimizations to make his product competitive. Comparing the standard features of each language is silly; the useful and exciting options are in the language's extensions. Your best bet is not to pick a language but a compiler.

For example, the C enthusiast saves a few bytes with embedded assignment, so now Professional Pascal has it. The Pascal fanatic enjoys a more efficient calling sequence, so Microsoft C includes it as an option. Both compilers support Intel segmented addresses, something undreamed of when these languages were invented.

Good code optimization is language-independent. Metaware's Pascal and C compilers share the same code generator, and I hope Microsoft lan-

guages move in this direction. If you need fast code, don't look at languages, look at compilers. But look quickly because the advantage changes from year to year. If speed is important, you need assembly language anyway.

So an unbiased user of computer languages (if there are any) would not choose one over the other. But most users passionately debate the merits of their chosen tongue. Like chunky and smooth peanut butter, the differences are real if not important.

Of the two, Pascal is more chunky and C is more smooth. Computer languages are a mixture of English words and special characters used as visual icons. Pascal uses more words, such as **Begin** and **End**. C uses more symbols. I like words (my product is a word processor), so I prefer Pascal. I bet Mac users prefer C, the more iconic language. Programming managers may prefer Pascal since it can be more readable.

Pascal is stricter than C. If you tell it variable X is a character, you can't say `X := X - 26` (as you can in C), because arithmetic on characters makes no sense. You could say `X := chr (ord (X) - 26)`, which looks longer but generates the same code. I think it's clearer too. (This function, by the way, would

convert a lowercase letter into uppercase.)

C people say they know what they're doing and prefer a language that doesn't get in their way. Pascal people say the language makes them express ideas clearly. Often I discover sloppy thinking on my part when my Pascal compiler reports an error. C would let me get away with it, and then I'd have to find the bug myself. Of course, C does catch some of these errors, and both languages let you escape these constraints with **ReType** or **ReCast** commands. The difference is style and flavor, not power or substance.

Most Pascals offer nested procedures, interface sections, and other ways of information hiding. Again, these extra rules help keep me out of trouble and can also help manage large, complex programming projects.

In short, I like the Pascal way of doing things. It's no better or worse than C, but if real issues like time or money concern you, don't pick a language. Pick a compiler.

Bob Wallace is president of Quicksil Inc., publishers of C-Write. He was also Pascal product manager for Microsoft from 1979 to 1983. These days he uses Metaware's Professional Pascal.

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SOFTLOGIC SOLUTIONS

The manual starts off with some introductory material explaining how the compiler works. It then goes through a confusing sample session, since the file names on the disk don't match those in the manual. Again, the split-up manual makes things more difficult than it need be, since the easier-to-use, one-step PL option is not discussed until the end of the manual. Ease of learning rates satisfactory.

The single compile/link driver now supplied with this product enhances overall ease of use. The debugger also supports the cause and boosts the ease of use score to very good.

Microsoft provides free telephone support for an unlimited amount of time, but it's not toll free. An on-line service, Microsoft On-Line, is available over GE's Genie network. Support policies are good.

MS Pascal is priced less than both Professional Pascal and Pascal-2, and it includes strong extras like Codeview and the Microsoft Editor. At \$300, it's an excellent value.

OREGON SOFTWARE'S PASCAL-2, VERSION 2.1M

Pascal-2 is paradoxically a highly standard compiler that offers many enhancements, including Turbo Pascal-compatible procedures and functions.

As with Meta's Professional Pascal, you must supply your own editor for Pascal-2 (macros are provided for Brief). Pascal-2 is a multipass compiler that produces an OBJ file that must be linked with the run-time libraries. (This is true for all but Borland's compiler.) The

programming environment is satisfactory.

Oregon Software offers a wide variety of useful language extensions (which you can disable in the interest of compatibility). There are also some extensions that are syntactically the same as Turbo Pascal, so you may be able to switch from one compiler to another. Language extensions rate a score of very good.

Of the four compilers reviewed here, only Pascal-2 was able to pass the BSI ISO validation suite for standard Pascal. Like Professional Pascal, this product lets you compile with a standard switch, which doesn't allow any strange language extensions. Versions are also available for VAX, PDF, Apollo, and Sun hardware, but not the Macintosh. Oregon Software also recognizes the widespread acceptance of Borland's Turbo Pascal and supplies some Turbo-compatible routines. You can also program graphics, but for that you need a file supported by Borland's Pascal (Version 3.0). For compatibility, it is excellent.

Supposedly, you can write programs to run under MS Windows, but this is documented poorly. A sample Windows program is provided, but the source code for it is not included.

You can compile Pascal-2 programs with a /Debug switch, giving you interactive control over a program's execution. You can set break points, examine or modify the values of variables, and do a statement-by-statement trace. This is all done in a command line environment and, compared to Microsoft's Codeview, is relatively crude — but it's better than nothing. Debugging is good.

Compile speed on our benchmarks was similar to MS Pascal and Professional Pascal and gets a satisfactory score.

```
D:\PASCAL\OREGON\pas2 sieve.pas
Pascal-2 (c) for IAPX-86\MSDOS. Version 2.1M
Copyright (C) 1986, 1987 by Oregon Software, Inc. ALL RIGHTS RESERVED.
Object filename: ISIEVE.OBJ
Source listing: INIL.LST:
Pascal-2 IAPX-86\MSDOS 2.1M 3-Aug-88 6:48 PM Size 81-1 Page 1-1
Oregon Software, Inc. 6915 SW Macadam Ave Portland OR 97219 USA
sieve.pas

38 count = count + 1;
//32

now 32: 'is' expected

*** There was 1 line with errors detected ***
Errors detected: 1

D:\PASCAL\OREGON
```

Oregon Software's compiler is highly standard and runs on a number of platforms.

The documentation for Pascal-2 is the briefest of the four compilers: a single spiral-bound book in a hardcover binder, with an additional 32-page photocopied addendum that covers the most recent enhancements (actually, a hard copy of the read-me file). There's a good section on how to convert Turbo programs and a quick-reference card that lists some of the options and debugger commands. We found the manual thorough enough and easy to navigate. We rate it satisfactory.

An Install program will copy the files to your hard disk, but you must provide the Set commands to tell DOS which directories contain the various files. Instructions are also given on how to set up the Brief editor (not included) to work with Pascal-2. All facets of compiling and linking are covered in the manual. Ease of learning is satisfactory.

The product includes several handy utility programs, including a cross-reference program and a source code formatter. You also get a profiler that will tell you how many times each procedure or statement is called. These contribute to a very good score for ease of use.

Oregon Software provides excellent support policies: unlimited toll-free telephone assistance, a bulletin board, a 90-day money-back guarantee, corporate

PRODUCT SUMMARY

PASCAL-2 VERSION 2.1M

Company: Oregon Software, 6915 S.W. Macadam Ave., Suite 200, Portland, OR 97219; (800) 744-8501, (503) 245-2202.

List Price: \$229.

Requires: IBM PC, AT, PS/2, or compatible; MS-DOS 2.0 or later; 320K of RAM (512K recommended); hard disk.

Pros: Includes several handy utilities; has many routines compatible with Turbo Pascal; source-level debugger.

Cons: Editor not included.

Summary: A Pascal compiler that's highly compatible with ISO standards yet includes many extensions — including Turbo Pascal procedures.

support, and a newsletter for users.

Considering its price (\$229) and its support of both the ISO standard and Borland's de facto Turbo standard, Pascal-2 is a very good value.

Contributing editor John Walkenbach is consumer research manager for a leading savings and loan association in Southern California.

INFO WORLD THE NEWS WEEKLY

REPORT CARD • PASCAL COMPILERS

	(Weighting)	Borland Turbo Pascal	Metaware Pascal	Microsoft Pascal	Oregon Pascal-2
Performance/features					
Programming environment	(100)	Excellent	Satisfactory	Very Good	Satisfactory
Language extensions	(75)	Excellent	Good	Very Good	Very Good
Compatibility	(50)	Satisfactory	Very Good	Very Good	Excellent
Debugging	(100)	Poor	Poor	Excellent	Good
Compile speed & performance	(100)	Excellent	Very Good	Satisfactory	Satisfactory
Execution speed	(75)	Very Good	Very Good	Very Good	Very Good
Documentation	(100)	Excellent	Satisfactory	Satisfactory	Satisfactory
Ease of learning	(50)	Excellent	Satisfactory	Satisfactory	Satisfactory
Ease of use	(100)	Excellent	Good	Very Good	Very Good
Error handling	(100)	Very Good	Very Good	Very Good	Very Good
Support policies	(25)	Very Good	Satisfactory	Good	Excellent
Technical support	(50)	Very Good	Very Good	Very Good	Very Good
Value	(75)	Excellent	Very Good	Excellent	Very Good
Final score		8.2	6.0	7.2	6.6

GUIDE TO REPORT CARD SCORES

InfoWorld gives ratings to finished production versions of products only, never to beta test versions.

Products receive ratings ranging from unacceptable to excellent in various categories. Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.

Very Good = 0.75 — Meets all essential criteria and offers significant advantages.

Good = 0.625 — Meets essential criteria and includes some special features.

Satisfactory = 0.5 — Meets essential criteria.

Poor = 0.25 — Falls short in essential areas.

Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 point of one another differ little.

Average score for products in this category: (None reviewed for recently.)

Executive Summary

All four of these products are high-quality compilers, suitable for use in professional program development.

For those who would like to give programming a whirl, we highly recommend Borland International's Turbo Pascal. You can get started quickly with this compiler — especially if you purchase one or more of the toolboxes. It's definitely the best in terms of turnaround time for locating and correcting errors, and it is the only compiler that provides graphics support. The lack of a source-level debugger is Turbo Pascal's only drawback, but Version 5.0 of the program should correct this deficiency. If you don't care about anything besides MS-DOS computers or the Macintosh, take a long look at this lightning-fast system.

If you're forward-looking and think you may want to develop programs for OS/2, Microsoft Pascal is your only choice. A bonus is the Codeview debugger that's included at no additional cost. This compiler is compatible with Microsoft's other languages, such as C and Basic, which is a plus if

you like using routines from more than one language at once.

If you need to write programs that will run on systems other than MS-DOS systems, Pascal-2 and Professional Pascal are good choices.

Of the two, Oregon Software's Pascal-2 is a bit easier to work with, includes more libraries, and is relatively inexpensive. It doesn't include an editor, but it does have a source-level debugger, though it's somewhat rudimentary compared to Microsoft's Codeview. This product also scored best on the ISO standardization tests. This is a good system for professional cross-platform development.

Metaware's Professional Pascal is the most expensive of the products tested and is positioned for the professional programmer who will write programs that will be ported to other hardware. You'll need to supply your own editor and source-level debugger for this compiler. Compile speed came in faster than Pascal-2. Metaware's system is low-frills, but it's a heavyweight compiler good for professional programmers.



First Look

By Michael J. Miller

Professional Extension Brings Ventura Publisher Even Higher-End Capabilities

While most desktop publishing packages are adding more and more word processing features, Xerox Ventura Publisher is taking a different course: It is adding more high-end features designed to make it compete with more expensive workstation publishing systems, such as Interleaf and Frame-maker.

To this end, Xerox has recently announced three new versions of the desktop publishing package. Ventura Publisher 2.0 is the mass-market upgrade for most desktop publishing customers and contains a large number of enhancements. The Professional Extension adds more sophisticated new functions, including the capability to create very long documents with tables and equations. Finally, a network server version (which I did not test) adds features such as chapter-locking, to prevent multiple users from using the same file, and browsing, so that you can look at documents but not change them. All these versions build on the basic outline of Ventura Publisher. The program is designed to let you create a series of frames within a chapter, with text and graphics filling those frames.

Most of the changes in Ventura Publisher 2.0 are relatively small enhancements that make the program easier to use, with only a few significant new functions.

One of the most obvious additions is support for spot color. You can now define colors on the screen and print out only specific colors (for separations) with registration marks — quite useful for creating documents that will have color, such as brochures or annual reports.

Many of the other functional improvements sound relatively minor, but they can be quite important in producing complex documents. These include the capability to size text in half-point increments, rotate text at 90-degree angles, insert a chapter and page number anywhere in the text, and continue the page numbering between chapters automatically. Another new feature in Ventura Publisher is automatic quote and em-dash conversion, which gives word processing files the correct quote marks and dashes.

Particularly useful are new commands that give you more control over where text appears on your page. For instance, you can now set text to appear at the top, middle, or bottom of a frame. The Anchoring feature — which anchors a picture to a particular part of text — now works much better, automatically backfilling text to put a picture at the top of a column.

I also like the capability to

change kerning and point sizes interactively. In this version you just select a range of text, and you can expand or compress it, or change the point size, using the arrow keys.

Many of the changes make the program easier to learn and use. New, context-sensitive help appears on almost every dialog

Similarly, you can produce integrals, braces, matrices, summation, and many Greek characters.

The Professional Extension also includes the 130,000-word EDCO hyphenation dictionary, which lets you control the length of the word that can be hyphenated and the number of

keep a huge single chapter in memory, rather than breaking it up into smaller chapters. It gives you more control over vertical justification to add space to ensure that a column of text is completely filled. And it adds a number of cross-referencing features, so you can cross-reference page and chapter numbers, tables, figures, etc., from within the text.

Ventura still doesn't have quite the word processing features one would hope for, and running text around an irregularly shaped graphic isn't very easy. In addition, I really would like to see a complete Undo feature.

Still, it is a powerful package that's relatively easy to learn and use. Taken as a group, the enhancements to the basic Ventura Publisher keep it at the top of the general MS-DOS desktop publishing market, doing much of the work for you. You can make minor changes to a complex document without having to change much of the subsequent file. At the same time, the additions in the Professional Extension version bring it within range of extremely high-end publishing systems, at a lower price and with far more modest

hardware requirements.

Ventura Publisher 2.0 requires 640K — and the developers are serious: Large TSRs won't leave enough room for the program. The Professional Extension can work in the same space, but it needs at least 1.2 megabytes of EMS memory if you want to run the hyphenation dictionary, one of its strengths. Both versions require IBM PCs or compatible computers with a hard disk, graphics board, and mouse. Xerox says Ventura Publisher will run under Windows, but only if you use a Microsoft Bus Mouse.

Xerox Ventura Publisher 2.0 has a list price of \$895, with the Professional Extension costing an extra \$595. Both are scheduled to be released by early October from Xerox Corp., Xerox Square, Rochester, NY 14644; (800) 832-6979. Users of Ventura Publisher 1.0 or 1.1 can upgrade to 2.0 for \$100. The combination of Publisher 2.0 and the Network Server is \$1,295, and it is scheduled for the fourth quarter.

First Look examines new personal computer products before they have been through a formal review.

The enhancements to the basic Ventura Publisher keep it at the top of the general MS-DOS desktop publishing market.

box, and it really does help you understand what to do. Similarly, the program now lets you choose between pull-down and drop-down menus, with the latter choice having the menu pop up whenever the mouse is positioned on top of them. And you can now print out the style sheets.

Many of the changes involve new or improved support for specific displays, printers, and graphics file formats. The new version of Ventura supports VGA and 400-by-600 displays in 16 colors or gray scale. It has drivers for Epson, NEC, and Toshiba 24-pin printers, as well as for the IBM Postscript Laser Printer. There are also additional fonts for almost all printers. A new utility that downloads and configures HP-compatible printers should significantly improve printing speed on those printers.

Among graphics file formats, this version adds support for TIFF files as well as enhanced support for Windows Metafile and Encapsulated Postscript files.

The Professional Extension adds a number of new functions to this mix. It offers a set of sophisticated table-making tools that let you set up a table as a matrix of rows and columns, defining such options as the width and height of the table cells; the size of space above, below, and between rows; and the border of the table. You then type in the contents of each cell. You can select different colors for different cells, and you can even set up a repeating table header. However, you can't directly read in spreadsheet or database information, except through files printed to disk.

To insert an equation into your text, you simply tell the program you want to insert a special item and choose the equation option, then type in an English equivalent for the equation, such as "a = pi * r ²."

characters not to hyphenate at the end of words. This option, which is designed for professional desktop publishing, requires 1.2 megabytes of EMS memory. If you don't have the EMS memory, you can continue to use the hyphenation algorithms that come with the basic Ventura Publisher, though without the additional features.

In addition, the extension lets you use EMS memory for longer documents, allowing you to

Short Looks

Short Looks are quick, initial looks at products by members of InfoWorld's review staff and the InfoWorld Review Board. They are not intended to be full reviews of the products.

TURBO PASCAL, VERSION 5

What's red and yellow and as lightning fast as ever? It's Turbo Pascal, Version 5 from Borland. The compiler, scheduled to ship this month, is just part of the new programming environment offered by Borland.

With this release of Turbo Pascal, Borland stresses its vision of an integrated programming environment, consisting of several languages with a common editing interface and the capability to use each other's code. With this offering, Borland also continues to pursue the professional programming market.

For Turbo Pascal 4 users, the change to Version 5 will be painless. The new features show up as enhancements to those we are already used to in Version 4. The transition will be a little harder for users of Version 3. Borland provides a program called Upgrade that will help make the changeover a bit easier.

There are a number of added

features with this compiler, such as a built-in debugging utility. Now you can trace program execution as your source-code lines scroll by. Single stepping, setting break points, and examining variables and data structures are just some of the debugging features available. Turbo Pascal 5 also supports Borland's new stand-alone debugger, which will be available this month as well.

Remember overlay support in Turbo Pascal 3? They put it back in Version 5, along with EMS support for the overlays. The built-in editor also can use expanded memory.

Graphics support has some new features, such as support for the IBM-8514 graphics card. There is also control for RGB analog palettes.

Context-sensitive help is available in the integrated environment, along with stand-alone TSR help for other editing environments.

In Turbo Pascal 4, if you wanted to use floating-point numbers on a machine without a math coprocessor, you had to declare the variables "real"; this limited mathematical accuracy. The new math library in Version 5 allows the IEEE single and double floating-point number types, as well as a real num-

bers, to run without the math coprocessor.

Some things remain the same. Turbo Pascal still compiles at the same lightning speed as its predecessors. The editor has the same familiar user interface with pull-down windows.

A sampling of programs in our library showed the executable files created by the new version to be very close in compactness to those created by Version 4.

Borland will offer Turbo Pascal, Version 5 in two flavors. The new Professional Pack combines the Pascal compiler with the debugger and assembler. The other package contains just the compiler. One other notable feature: Not too long ago the Turbo Pascal package could be lifted with one hand; with the Professional Pack, Turbo Pascal now weighs about the same as Borland's compilers.

The changes in this version are more subtle than the changes from Version 3 to Version 4. They are, however, no less significant. This upgrade is definitely a winner.

The retail price for the compiler is \$149.95. The Professional Pack is \$250. Users can obtain upgrades directly from the vendor.

Borland International, 1800 Green Hills Road, P.O. Box 660001, Scotts Valley, CA 95066-0001; (408) 438-8400.

—David Chalmers

TURBO DEBUGGER AND ASSEMBLER

In addition to the upgraded language products being offered by Borland, there are two other new products: a new (for Borland) assembler, and a debugger designed to compete with Microsoft's Codeview.

Borland has taken a new tack with its language product lines. For the first time, both Turbo Pascal and Turbo C are being marketed in a professional pack-

age separate from the standard package.

The professional packages contain the compiler, in addition to the new assembler and the stand-alone debugger. The compiler in both packages is the same.

The debugger is probably the more exciting of the two new products. This type of debugger shows the source-code listing while the program is executing. The buzzwords in this instance

are "full symbolic debugger."

One of the more elementary things this debugger can do is single-step your problem program while showing a view of your source code stepping along parallel to the executing program. This can be carried further with the animation function, executing the programs step-by-step in slow motion. During this process you can make the program stop at defined points, so you can view

almost anything — including what is happening to the screen output.

Going even further, you can make the program break execution depending on the values in your program variables, or you can change these variables to any setting while the program is executing. The debugger's feature list goes on and on.

The user interface is up to Borland's usual high standards. Pull-down menus and windows

abound; the same function keys are used for corresponding functions in both debugger and language programs; there is context-sensitive help available; and the windows can view a number of things at the same time.

One of the views that was interesting to me was a view of the source code — Pascal in this case — in addition to a view of the corresponding assembly language and what was happening in the registers of the CPU. My program at this point was executing slowly.

There are three versions of the debugger in one package. The standard version loads the debugger, which loads the problem program. Another version is able to use two computers: One of the computers runs the problem program, and the other runs the debugger (via a serial port). The computer running the debugger controls the execution of your program remotely, using no RAM in the program computer.

The third debugger in the package takes advantage of a 386 computer. It uses the special debugging registers available in the 80386 chip, and if enough extended memory is available, the debugger is entirely located outside the normal DOS system memory.

The remote debugger and the 386 debugger are useful because they make it possible to detect subtle bugs that show up only when your program is loaded in normal DOS memory, and not when it is loaded on top of a debugger.

The second product in the professional package is an assembler that can assemble programs in several modes. One is Borland's "Ideal" mode, which simplifies some of an assembly language program's syntax, as well as doing more thorough type checking.

The other modes emulate various versions of the Microsoft assembler (MASM). One of these modes is whimsically called the "Quirks" mode because it emulates even the bugs and strange constructs of the MASM assembler.

This assembler is different from Borland's other language products in that it has no integrated environment. I hope this will be changed with a later update. The integrated environment with context-sensitive help would be a definite asset in assembly language programming.

As with the other language products, the Turbo Assembler runs like greased lightning. It is also well-documented.

The addition of these two tools rounds out Borland's language offerings nicely. The debugger and assembler programs are packaged together for a retail price of \$149.95. The package is available from Borland International, 1800 Green Hills Road, P.O. Box 660001, Scotts Valley, CA 95066-0001. This package is an excellent value.

— David Chalmers



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Software Reviews

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Poor = 0.25 — Falls short in essential areas.

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Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 points of one another differ little.

Average score 1198/7 for all products reviewed: 6.5.

• INDEXES

Indexes appear in the first issues of January, April, July, and October. For back issues, specify dates and send \$2.95 per issue to InfoWorld Customer Service, P.O. Box 5994, Pasadena, CA 91107. Please allow six weeks for delivery.

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Norton Commander, Version 2.0

Near-Perfect DOS Shell Emerges as Market's Best

Upgrade Is Powerful, Loaded With Features, and Easy to Use

By John Walkenbach Contributing Editor

Trying to navigate your way around a crowded hard disk with only the DOS prompt to guide you is a bit like trying to drive the Los Angeles freeways blindfolded. Although DOS 4.0 and OS/2 Presentation Manager will provide integrated file management features, most of us will be using current versions of DOS for some time — hence the need for DOS shell products to help with file management chores.

Not only is a good DOS shell fast and intuitive, it doesn't get in your way if you need to access DOS directly. The ideal DOS shell also includes extra features to make life easier — yet doesn't force the user to learn complicated commands. After working with Norton Commander, Version 2.0, we think we've found the nearly ideal DOS shell.

A major upgrade of Version 1.0 (reviewed July 7, 1986), Norton Commander 2.0 is recommended for all DOS users, regardless of their expertise.

FEATURES:

The beauty of Norton Commander stems from the fact that it's a full-featured DOS shell that doesn't restrict access to the DOS prompt. Therefore, you can have Norton running at all times, yet use it only when you want to. To issue a command at the DOS level, you simply start typing as usual. By pressing cursor keys or function keys at any point, you can activate the window-oriented file manager. A new pull-down menu system works in conjunction with the function keys and Control-key combinations.

The term "point and shoot" is a fitting description of the user interface. You can point to a file or group of files in the directory list and perform all the common DOS functions such as erase, copy, and rename. As a bonus, you can create a file that specifies data file extensions used by your applications, and thereafter when you point to a data file, Commander will automatically load the application along with the selected file. For example, you can point to a .DOC file, press Enter, and Commander automatically loads Microsoft Word along with the selected



One innovation in the new Commander: dual half-screen directories. Here, one displays a subdirectory tree, the other a file listing. The DOS command line remains active.

document.

This works only with applications that take a command-line argument. With Lotus 1-2-3, for example, you can only load the program; you'll need to retrieve your worksheet as usual.

Norton Commander allows you to display one or two directories simultaneously in separate windows and provides full control over file sorting. You can view file names alone or show more detailed information such as size and date. A new feature lets you work with a tree diagram of your directories in one or both file windows.

Another new feature lets you display an optional one-line summary that shows the number and total size of all selected files. This is handy if you need to recover a specific amount of disk space, since it keeps a running tab as you mark files.

You can also develop pop-up application menu — either a global menu or separate menu for each directory. The product also has a built-in file editor, along with a unique file viewer that lets you display the contents of any file, even non-ASCII files. This release extends file viewing significantly by letting you view 1-2-3, Symphony, and Dbase files in a highly readable format. For example, if you select a WK1 file to view, the screen will resemble 1-2-3, and you can even move among cells using 1-2-3 cursor commands. For Dbase files, you can view records one at a time in a convenient field-oriented for-

mat. This is a quick way to clean up old files that are no longer needed, since you don't have to load 1-2-3 or Dbase to see what's in a file.

Those with an EGA card can opt for a 43-line display — 50 lines for VGA. You can run Norton Commander in color (no choices available), black and white, or a special mode for laptops. The program will also remember your 15 most-recent DOS commands and let you reissue selected commands from a menu without having to re-type. Another option lets you edit past commands.

A useful command compares the files in two directories and marks those that don't exist in the other directory or those that are more recent. This lets you easily update directories with new files or avoid copying over existing files.

Finally, a file-find command (borrowed from the Norton Utilities) lets you locate all files on a disk that match a user-specified file mask. You can get a list of all files that begin with A and have an .EXE extension by entering A*.EXE.

PERFORMANCE:

The Norton Commander can run in either of two modes: RAM resident or reload. The resident mode, which is technically not TSR and therefore will not conflict with other RAM-resident programs, is recommended for floppy disk users and requires about 138K of RAM. The reload mode uses

only 13K of RAM because the bulk of the program is unloaded from memory when you run an application.

The new version, however, still lacks a few handy features found in Xtree Pro. The file-find command will locate and display all the files that match your criteria (across all directories), but you cannot tag them all for subsequent action. For example, if you want to erase *.BAK files from all directories, you must do so one directory at a time.

We certainly like the new 1-2-3 and Dbase file viewers, something that is offered by no other utility we know; but for other kinds of files, the file viewer is still relatively limited.

It shows the full file contents, but with no filtering option, such as displaying only ASCII characters or in hex mode (features found in Xtree Pro's file viewer), or filtering for Wordstar format (found in Gazelle's Q-DOS II). (See product comparison of DOS Shells, January 18.)

Viewing most word processing files still results in a fair amount of garbage characters interspersed among your text. On the other hand, Norton's competitors lack the handy capacity of displaying 1-2-3 or Dbase files.

Version 2.0 is 100 percent compatible with the earlier version, and the new features make it better than ever. Not only does the product do just about everything you need in terms of file management, the new tree display helps you navigate through even the most complex directory hierarchy.

Commander works equally well with mouse or keyboard, and things always move along quickly — even if you use the reloadable version of the program. On a hard disk, it takes only a second or two for automatic reloading after you run a program.

Creating user menus is about as direct a process as possible. In addition to the main user menu, each directory can also have its own menu, and the menus can be chained together to create complex systems. For example, the main menu might have a selection called DOS Functions, which would switch to the DOS

Also Included In This Section

- Alphaworks, Version 1.0.....66
- Designer, Version 1.2.....69
- Review Responses.....72

directory and automatically pop up another menu.

Apart from the minor file viewing limitations we mentioned, we had to scrape pretty hard to come up with even a minor wish list of missing features. For example, it would be able to sort the directory entries in the tree diagram. We would also like to limit the file display to selected files.

As it stands, Norton Commander easily earns a very good performance score.

DOCUMENTATION:

The package comes with two books: a reference manual, plus another smaller volume that provides a concise pictorial summary of the product. Both books are well-designed and easy to read. In addition, rudimentary on-line help is available at the press of the F1 key.

On-line help is limited to a single screen that summarizes the control-key commands, plus simple help windows in the editor. On-line help that explains the menu functions, function keys, or mouse usage is lacking. In reality, however, the additional on-line help is hardly missed because the program's

operation is so straightforward.

The cursory on-line help, when considered with the excellent manual, add up to a very good documentation score for Norton Commander.

EASE OF LEARNING:

Installation consists of copying four files to your hard disk or a working floppy. Most users will want to add the program to the end of their Autoexec file so it will run automatically at boot-

up. The next steps are optional: creating your menu and extension files. Both files can now be done by making a selection from the pull-down menu system — an improvement over Version 1.0.

The quick-start manual is designed for those with a bit more experience and provides a to-the-point summary of all operations. Even so, a novice can learn the basics of this product in about 15 minutes or

master it within an hour. Because we can't imagine an easier-to-learn DOS shell, we give the Norton Commander an excellent score.

EASE OF USE:

The intuitive point-and-shoot interface will be familiar to most PC users, and in this version mouse users can perform all functions available to keyboard users.

The process for setting up

user menus is the easiest we've seen. It consists of editing a text file that resembles a group of batch files. You enter the title that will appear in the menu, followed by the DOS commands to execute (indented).

A minor drawback is that you cannot pause playback to enter command line parameters. You can execute application programs or set up the menu to perform DOS commands such as Chkdsk or For-

The Xerox Ventura noble literature.



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INFO THE WEEKLY

REPORT CARD

DISK UTILITY

NORTON COMMANDER

VERSION 2.0

Criterion	(Weighting)	Score
Performance	(400)	VG
Documentation	(80)	VG
Ease of learning	(40)	E
Ease of use	(120)	E
Error handling	(80)	VG
Support		
Support policies	(40)	VG
Technical support	(40)	VG
Value	(200)	E

Final score 8.4

E=Excellent, VG=Very Good,
G=Good, S=Satisfactory, P=Poor,
U=Unacceptable

PRODUCT SUMMARY

Company: Peter Norton Computing Inc., 2210 Wilshe Blvd., Suite 186, Santa Monica, CA 90403; (213) 919-2000.

List Price: \$89.

Requires: IBM PC, XT, AT, or PS/2 or compatible; DOS 2.0; 138K of RAM (resident) or 13K (resident); two floppy drives.

Support: Unlimited, non-toll-free support; weekdays 8:30 a.m. to 5 p.m.; 90-day product usability warranty with 10 percent restocking fee; BBS support via The Source; \$33 for upgrades.

Pros: Fast; shows two directories/directory trees at once; built-in Lotus 1-2-3 and dBase file viewers; user menus easy to make; uses little RAM.

Cons: Few; No filters for text file viewing; can't display only selected file types.

Summary: A fast, efficient, indispensable DOS shell that helps novice or advanced computer users with usually tedious file management chores. Recommended.

mat. A new feature lets you have a different user menu in each subdirectory, and menus can now consist of up to 40 choices in a scrollable window.

Besides the normal DOS commands, the Norton Commander provides a Move function to quickly move a file to another directory without resorting to the usual copy/erase procedure.

The built-in editor handles files of up to 30K and works

with any file, ASCII or otherwise. Editing commands resemble Wordstar. Besides a search command, Commander has nothing fancy like automatic word wrap or cut and paste. If you prefer a more powerful editor, you can specify your own. This Norton will simply run your specified editor when you press the Edit function key—and it will automatically load the selected file.

At any time, pressing Ctrl-

Enter will bring the file name you're pointing to down to the DOS command line. This is particularly handy if you need to perform chores the Norton Commander can't handle—for example, concatenating files with the copy command. This feature would be even handier if it included the path.

This product provides a near-perfect balance between functionality and ease of use. Even if you don't use it for months,

Norton is intuitive and easy to pick up. Norton Commander earns a score of excellent for ease of use.

ERROR HANDLING:

The Norton Commander improves upon DOS's error handling in several ways. For example, Commander makes you verify your intentions before overwriting a file with a copy command.

A small problem evident in

the original release has been corrected. In the past, if you tried to read from an empty floppy drive, you could not continue until you inserted a disk. With Commander, you now have the option of choosing another drive.

One potential source of confusion might arise in the tree display. If you make or remove directories outside of the Norton Commander with the DOS Mdir or Rmdir commands, the changes will not be reflected in the tree display unless you explicitly force a re-scan of your disk structure. This causes no harm, but it is inconvenient.

The program displays all files in a directory—even those with a "hidden" attribute. Hidden files are identified by an additional graphic character before the extension. This introduces some danger, however, since such files are usually hidden for a reason. Norton Commander takes no extra precautions with hidden files, and it lets you erase them just like any other file. Files marked "read only," however, do require additional verification before they are erased.

These are the only shortcomings we found. Commander's error handling merits a very good score.

SUPPORT:

Unlimited telephone support is available, but you pay for the call to Los Angeles.

Bulletin board support is also offered through The Source, and the product comes with a 90-day usability warranty with a 10 percent restocking fee. Users of Version 1.0 can upgrade for \$33. Support policies earn a very good score. Our first two calls to Peter Norton's technical support department resulted in five minutes on hold, followed by an opportunity to leave a recorded message. On both occasions, our calls were returned promptly. On the third try, we got through right away. The technicians we spoke with knew the product well, and we rate technical support for Commander very good.

VALUE:

The Norton Commander is a near-perfect product and stands out as the best all-around DOS shell on the market. The product is loaded with features, is extremely powerful, and yet it remains very easy to learn and use.

If you find yourself spending too much time struggling with file management, this is the product to buy. For Version 1.0 users, Commander is well worth the \$33 upgrade fee. The price has increased slightly over Version 1.0, but at \$89, the Norton Commander certainly still qualifies as an excellent value—regardless of your level of expertise.

Contributing editor John Walkenbach is consumer research manager for a leading savings and loan association in Southern California.

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Alphaworks, Version 1.0

Low-End Package Integrates Surprising Array of Features

By Scott D. Palmer Review Board

Alphaworks is a low-end integrated package that competes with Microsoft Works, Ability Plus, and PFS First Choice. It holds its own against its competition. It is remarkably full-featured, easy to use, and well-documented.

Alphaworks modules are not as well-integrated as other packages, but the package has powerful task-switching features and an excellent communications module. It also benefits from one unique feature: Its spreadsheet uses the Lotus 1-2-3 file format, and its database uses the Database III Plus file format.

FEATURES:

Alphaworks is an enhanced and renamed version of Electric Desk. It has integrated features for word processing, flat-file database management, spreadsheet analysis, and telecommunications. Alphaworks makes file compatibility a key selling point: It uses files from Lotus 1-2-3 and Database III Plus without modification, making it easy to share work with others who have those packages.

Alphaworks' individual modules (call-

ed "services") are quite robust. The spreadsheet module supports worksheets of up to 255 columns by 8,192 rows and includes all 1-2-3 functions except macros. You can split the screen into two "viewports" to look at different aspects of your worksheet and make the two scroll together. The module supports pie charts and line, bar, stacked bar, and XY graphs.

The word processor has a spelling checker and thesaurus, forward/backward search and replace, and very flexible formatting options.

The DBMS module supports all of Database III Plus' non-relational file features. It has features for calculated fields and data validation, as well as versatile reporting features and a phone dialer.

Alphaworks' telecommunications module is fairly basic, but has a nice record-and-playback feature to automate logging on to remote computers. It also supports Xmodem and CRC-Xmodem file transfers.

Alphaworks can keep up to 29 tasks open at the same time and lets you toggle among them using menu or speed keys.

To handle this volume of tasks, Alphaworks can use EMS expanded memory or AT extended memory, or it can swap to a hard disk. Print spooling (up to nine print jobs at a time) is also supported. You can split the screen horizontally to have two different tasks on-screen at the same time.

One nice feature, which is common to all of Alphaworks' modules, is a menu option that tells how much RAM and disk space are available for opening (or holding) more tasks.

We reviewed competing products such as Ability Plus 1.01, Microsoft Works 1.0, and PFS First Choice 2.0.

PERFORMANCE:

In general, Alphaworks performs very well, though there are one or two rough edges in specific modules when menu options do not work.

Alphaworks' spreadsheet is solid but unexciting; it stays close to 1-2-3 in functionality without running afoul of the look and feel issue. Formulas and macros are entered in much the same way, and you can select different recalculation options from a menu. Graphs are clear, but not spectacular. Like most low-end

F1	F2	F3	F4	F5	F6	F7	F8	F9
Help	Cell	Style	Layout	Average	Graph	File	Menu	Window
1	A	Columns	"N"					
2		Switch-Viewport	"S"					
3		Viewports						
4	Salms	Titles						
5								
6	Raw Material					9,800	25,000	
7	Labor	2,800	2,500	4,000	7,000	15,500		
8	Overhead	1,500	2,000	2,300	3,000	8,800		
9	Cost Total	7,500	9,500	13,300	19,000	49,300		
10								
11	Gross Margin	12,500	15,500	16,700	16,000	60,700		
12	Taxes	6,250	7,750	9,350	8,000	30,350		
13	Net Profit	6,250	7,750	8,350	8,000	30,350		
14								
15	Tax Rate	50.00%						
16								
17								
18								
19								

Alphaworks maintains a consistent user interface, with pull-down windows, for the spreadsheet, word processing, and database modules.

packages, Alphaworks does not link worksheets.

X-axis labels always appear above the bars in bar charts, under the X-axis where they normally would be. A menu option is supposed to place labels below the axis, but it doesn't work.

We rate Alphaworks' spreadsheet satisfactory in capabilities.

The word processing module is surprisingly full-featured, with almost everything except indexing and table-of-contents generation. The spell checker and thesaurus are fast and accurate. The spell checker works well at identifying misspelled words, but does not limit the alternatives. For example, if you misspell *require* as *quire*, it presents all the words starting in *re* as alternatives. There is also a word count feature.

Formatting options are very flexible, and a typewriter feature sends text to the printer either line-by-line or character-by-character. Alphaworks' word processor also has on-screen page breaks that are automatically updated as you edit a document. Form letters and other database-merge documents are easy to create.

We rate word processing good.

Alphaworks' database module supports Database data types and functions, but without Database's relational or programming capabilities. You can use a few simple if-then constructs to sort databases or generate reports. You can create several custom data entry screens for each data file; standard row-and-column reports are easy to set up. More sophisticated reports, with fields laid out any way you want (including Database memo fields), can be created by Alphaworks' word processing module. In this respect, Alphaworks' reporting capabilities are superior even to those in Framework III.

In general, Alphaworks calculated and virtual fields. Its support of "field rules" for data validation make it superior to Database III Plus in this respect. Records can be displayed in either single-record or table format. However, you cannot window a column in the table format (despite a menu option that says you can). To solve this problem, you must redefine the field and specify a greater width.

On balance, we rate Alphaworks good in database management.

In comparison to Microsoft Works, Alphaworks runs very slowly. For example, Alphaworks' database module took 66.5 seconds to sort a 1,000-record file by last name; Works took 2.2 seconds. The Alphaworks spreadsheet module took 23.4 seconds to recalculate a financial spreadsheet, compared with 24.6 seconds for Works. True, Works is quite fast

compared to other integrated packages, but Alphaworks is still surprisingly slow.

However, the benchmarks for the two packages' word processor modules were quite similar, where Alphaworks outperformed Works in a number of instances.

On balance, however, we rate speed poor.

Alphaworks lacks some of the integrating features found in other packages. There is no general cut-and-paste feature, although the spreadsheet does have a menu option to move data into word processing documents. You can move data between the database and spreadsheet modules using DIF-format files. You cannot merge graphs into a word processing document. Merging database information can be done by embedding merge commands. The data integration features are not inspired. We rate Alphaworks satisfactory in integration.

Alphaworks' communication module works like a charm, and its menu-driven capability to record log-on scripts is a real boon. It is limited in the file transfer protocols it supports and lacks advanced features, but it can handle two sessions at a time over two serial ports.

Alphaworks lets you create macros that are only active in individual modules (Alt-A through Alt-Z) or systemwide (Alt-I through Alt-O). In addition, Alt-A and Alt-I are "auto-execute" macros; an Alt-I macro will automatically execute when you load the program, and an Alt-A macro will execute when you enter the module. Macros can be created by recording keystrokes and edited by using a menu option.

You can access the operating system from any module.

The elaborate macro capability earns Alphaworks a score of very good in additional features.

DOCUMENTATION:

Alphaworks has separate tutorial and reference manuals, a quick-reference booklet, and extensive and well-organized on-line help. Each manual has a detailed table of contents and a good index.

The tutorial manual takes you step-by-step through all the main features of the program. More advanced topics are discussed in the reference manual. With reference manuals is clearly written, with a virtual absence of computer jargon. Both manuals make extensive use of screen shots to illustrate specific points.

On-line help is context-sensitive, clearly written, and several levels deep. A menu lists function keys that provide more information on other topics, as well as an overall help index. We rate Alphaworks documentation excellent.

INTEGRATED SOFTWARE INFOWORLD BENCHMARKS			
	Alphaworks 1.0	Microsoft Works 1.0	
Database Module¹			
Unindexed access	22.3	<1.0 ²	
File sort	66.5	2.2	
ASCII import	196.9	149.6	
Global replace	42.4	11.0 ³	
Indexed record access	N/A ⁴	N/A ⁴	
Database import	Compatible	N/A	
Spreadsheet Module¹			
Arithmetic model	51.2	2.3	
Financial model recal	233.4	24.6	
Scientific model			
Calc all	90.5	15.2	
Calc one column	90.5	6.5	
Calc	6.0	5.9	
File size	66K	66K	
Consolidation mode ⁵	3 min.	3 min.	
Word Processor⁶			
Document load	4.2	<1.0	
Document save	2.0	Varies	
Export ASCII	2.1	7.1	
Jump top to bottom	<1.0	<1.0	
Reformat	2.0	3.0	
Global search and replace	1.2	1.0	
Spell check	83.0	63.0	

All times in seconds.

All tests conducted on a Compaq Deskpro 286.

N/A: Feature not available.

¹Tests used an address-style database with 1,000 records of 10 fields and 112 characters total.

²Database is RAM-based.

³Could not globally search and replace. Score indicates time required to query all needed records and then change manually.

⁴Does not index.

⁵The arithmetic model tests simple arithmetic functions; since only 14 percent of the spreadsheet is affected by the change we make during the test, it also measures minimal recalculation. The financial model uses a 180-month mortgage. The scientific model used a spreadsheet designed to generate a normally generated sample; a complex equation generated 100,000 of the 1,200 cells; it was used to time calculation of the entire spreadsheet and minimal recalculation.

⁶Time to set up consolidation.

⁷Tests used a 15K file that contained simple formatting commands. The document was typical paragraph-style text.

EASE OF LEARNING:

The Alphaworks install program would not work on a shared hard disk and locked up when we tried to install Alphaworks on a 286-based PC, but it worked fine on a 386-based PC. We solved these problems using a work-around provided by technical support. The company blames a bug in early copies of the program and says it has now been corrected.

When the install program works properly, installation takes about 10 minutes. Learning how to use the basic features takes about 30 minutes.

Because of its excellent documentation and on-line help, as well as its consistent and intuitive command structure, Alphaworks is exceptionally easy to learn. Most tasks can be chosen from on-screen menus that are almost always present. Only the limited integration features introduce a learning curve when it's time to trade data.

We rate Alphaworks very good in ease of learning.

EASE OF USE:

The consistent menu structure of all its modules, the abundant speed keys, the macro capability, its capability to use 1-2-3 and Dbase III Plus files directly, and its extensive on-line help make Alphaworks a champ in ease of learning. The top-line menu is always present. On-line help is context-sensitive, divided by topic, and comprehensive; this lets you

start using the program very quickly.

We rate Alphaworks very good in ease of use.

ERROR HANDLING:

Alphaworks traps most user errors very well. It is virtually impossible to forget to save a file or to delete anything by accident. If you attempt to close a module without saving your work, it asks you to confirm your decision to exit, then beeps, warns you that work will be lost, and makes you delete a block of material, it is kept in the cut-and-paste buffer and can be restored until you use the buffer again. You can back out of almost any situation by repeatedly pressing Escape.

We were unable to make Alphaworks crash by pressing the wrong keys. The one-level undelete and conscientious

error messages earn Alphaworks a very good rating in error handling.

SUPPORT:

Alpha Software provides free (but not toll-free) phone support to registered users from 9:15 a.m. to 5 p.m., Eastern time, weekdays. The company also offers 24-hour support on its electronic bulletin board. We rate support policies good.

When we called for phone support, the wait before we got a technician ranged from 10 seconds to 8½ minutes, with an average wait of about four minutes. Technical support people were friendly and helpful, but seemed to differ widely in their product knowledge. However, our questions were always answered, even if it meant waiting on hold while the support rep asked someone else. There was no answer when we called

the support bulletin board. We rate technical support satisfactory.

VALUE:

Alphaworks is a well-documented and surprisingly full-featured integrated package for its price (\$195). It is not as well-integrated as Ability Plus, nor as fast as Microsoft Works, but it offers robust word processing and database capabilities combined with remarkably good report generation. It is cheaper than Ability Plus and the same price as Diamond and Microsoft Works, to which it compares well. We rate Alphaworks a very good value.

Scott D. Palmer is a senior systems consultant at RGMS Computer Systems, a microcomputer consulting and custom programming firm in Washington.

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INFOWORLD PRODUCT COMPARISON—REPORT CARD

PRODUCTS	RELATIONAL DATA ENTRY	RELATIONAL REPORTING	PROGRAMMING LANGUAGE	PROGRAM SPEED	DOCUMENTATION	EASE OF USE	TECHNICAL SUPPORT	VALUE	FINAL SCORE
CLARION PROFESSIONAL DEVELOPER 2.0	EXCELLENT	EXCELLENT	EXCELLENT	GOOD	VERY GOOD	EXCELLENT	EXCELLENT	EXCELLENT	8.2
PARADOX 2.0	EXCELLENT	EXCELLENT	VERY GOOD	SATISFACTORY	EXCELLENT	EXCELLENT	GOOD	EXCELLENT	8.2
PARADOX 2.0	EXCELLENT	EXCELLENT	VERY GOOD	SATISFACTORY	VERY GOOD	EXCELLENT	GOOD	EXCELLENT	8.0
DBASE III PLUS 3.5	EXCELLENT	EXCELLENT	GOOD	SATISFACTORY	VERY GOOD	EXCELLENT	GOOD	EXCELLENT	7.8
DIAMOND 2.0	EXCELLENT	EXCELLENT	VERY GOOD	GOOD	VERY GOOD	SATISFACTORY	UNACCEPTABLE	GOOD	6.6
ADVANCED REVOLUTION 1.0	EXCELLENT	EXCELLENT	VERY GOOD	GOOD	VERY GOOD	VERY GOOD	UNACCEPTABLE	GOOD	6.2
DIAMOND III PLUS 3.5	POOR	POOR	GOOD	SATISFACTORY	EXCELLENT	SATISFACTORY	GOOD	POOR	5.2
PROFESSIONAL ORACLE 2.0	EXCELLENT	POOR	EXCELLENT	GOOD	POOR	UNACCEPTABLE	SATISFACTORY	POOR	4.9

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INFO WORLD THE NEWS WEEKLY

REPORT CARD

INTEGRATED SOFTWARE

ALPHAWORKS

VERSION 1.0

Criterion (Weighting) Score

Performance

Spreadsheet (50) Satisfactory

Word processor (50) Good

Database (50) Good

Speed (50) Poor

Level of integration (50) Satisfactory

Other modules/features (50) Very Good

Documentation (100) Excellent

Ease of learning (100) Very Good

Ease of use (250) Very Good

Error handling (75) Very Good

Support

Support policies (25) Good

Technical support (50) Satisfactory

Value (100) Very Good

Final score **7.0**

Average score this category 6.8

PRODUCT SUMMARY

Company: Alpha Software Corp., 1 North Ave., Burlington, MA 01803; (617) 229-2924.

List Price: \$195.

Requires: IBM PC, XT, AT, or PS/2 and compatibles; 512K of RAM, 640K recommended.

Pros: Full-featured; easy to use; excellent documentation.

Cons: Not as well integrated as other packages; some menu options do not work; database and spreadsheet are slow.

Summary: Alphaworks is a well-made, low-end integrated software package with powerful task-switching features.

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regular distances and angles from the original. Imagine creating a flower by drawing a single petal. Designer does both circular arrays (like the flower petals) and rectangular arrays (e.g., the windows in an office building).

The procedure for locating and selecting objects to be edited is flexible as well. In an operation similar to a word processor's search and replace, you can fill in a dialog box to search for any objects with specified attributes (layer, color, line width, etc.) or by names you've assigned them.

Once an item or collection of items is selected, it is surrounded by eight small black squares, called "handles." Drag a corner handle and the objects resize proportionately. Dragging the center handle on any side resizes in one direction. You can also rotate the items, either by dragging, by predetermined steps, or by flipping in 90-degree increments.

You can transfer the attributes of one object to another, change the shape of objects by dragging their vector points, and smooth or unsmooth polylines and curves. You can combine several objects into a single complex shape or explode an object into individual objects. Finally, you can connect objects into a closed or open "path" so it can be filled with a color or pattern or used as a mask.

Technical drawing requires precise means of placing and measuring objects. Designer has a full complement of both object and grid snaps. Grids can be set to any frequency or proportion. Rulers that show your horizontal and vertical cursor position border the drawing at the top

and left. You can also specify measurements every way: inches, feet, feet and inches, yards and feet, metrically, and in typesetting points and picas. You can even dimension by time increments when you want to draw project-planning charts and graphs.

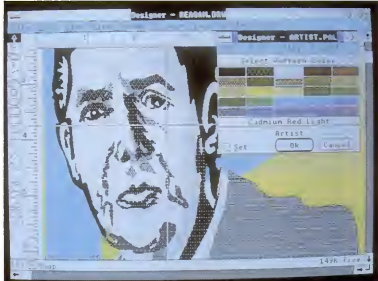
To help align one object with another, you can switch to a full-screen cross-hair cursor. There's also an automatic object alignment command in Designer, which is very helpful when drawing organizational charts.

One of Designer's advantages over Macintosh-based illustration software is that drawings can be as large as 54 8½-by-11-inch pages—about 5½-by-6½ feet.

Though Designer has tools and features to satisfy both the professional and amateur artist, for those who won't find the time to trace (a portrait of Reagan took us six hours), Micrograf's has included an exceptionally useful and clearly drawn collection of user-modifiable, general-purpose clip art. Additional libraries are available at a reasonable \$79.95 and include computers, maps, business scenes, and even specialized libraries for architects and other mechanical drafting disciplines.

PERFORMANCE:

We did our testing on an Everex Model 1800 10-MHz, zero-wait-state AT clone. Even though a drawing that took AutoCAD 2.5 seconds to redraw took Designer 7 seconds, it's much quicker than we expected from a Windows program; we seldom found ourselves impatiently drumming our fingers. However, if you're working with multiple windows



Designer, a sophisticated PC line-drawing package that offers more versatility than similar Mac programs, rescales drawings to any size and prints them at high resolutions.

and don't have EMS 4.0 expanded memory, Designer will constantly access your hard disk, slowing operations to the pace of a snail's pace. (Version 1.3, now in production, will add support for earlier versions of expanded memory.)

Perhaps of greater merit than raw speed is Designer's capability to do what it claims— it does its jobs well. Still, we'd like to see some features added that would hasten and simplify the drawing process:

- Bezier curves, which are used in all Macintosh illustration software because their control points offer more precise curve fitting. Designer's splines are easier for beginners to use because the curve simply passes through the points you lay down, but it would be helpful to have the choice.

- Automatic fill gradation (grays or colors that "fade" from light to dark); with Designer, you have to fake this effect manually.



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OCTOBER 3, 1988

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Microsoft Corporation

OS/2 EXTENDED EDITION COMMUNICATIONS
MANAGER — *Speaker to be Announced, IBM*

ALTERNATIVE TO EXTENDED EDITION —
John Bacon, Vice President,
Digital Communications Associates

LAN-S-THE NEXT GENERATION — *Doug Gold*
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• The capability to "mask" an object that's larger than the masking path, i.e., to trim a drawing to fit precisely inside another drawing.

• An option for applying a drawing as a fill pattern.

• An "auto-trace" capability for instantly outlining any edge you click on.

All of those features are found in current versions of either Freehand or Illustrator, the state-of-the-art Macintosh programs that serve as benchmarks for this type of software. A Micrografx spokesman says these features will gradually be incorporated into future versions of Designer. In the meantime, Designer gives you more options and attributes for the functions it does perform than either Mac product. Designer is a powerful studio in the hands of either a professional or amateur artist and does its job in less time than you'd expect from such a complex application running under Windows. Leaving room for future improvements, we rate performance good.

DOCUMENTATION:

The manuals for Version 1.2 of Designer have been reorganized and edited. The most significant improvement is that tutorials are in a separate booklet, uninterrupted by reference details. We find it odd, however, that there are still no tutorials for tracing.

The manuals are pleasantly designed and, for the most part, the writing is clear

and clear. Notes of importance are set apart in boldface, and there are step-by-step lists for every complex procedure, for both keyboard and mouse. Illustrations, usually in the form of screen shots, are plentiful.

On the debit side, there's no color to highlight and warm things up, the indexes are a bit sparse, and a few of the step-by-step lists still omit a step or two.

On balance, we rate documentation good. These manuals are professional, and minor shortcomings are to be expected for such a robust new product.

EASE OF LEARNING:

If you have a mouse (no graphics program is efficiently operated from the keyboard), you can point and click your way to discovering almost everything there is to know about Designer.

Don't confuse ease of learning with accomplished artistry, however. Designer is a complex and powerful program that's going to take time and practice to master. In the meantime, you should be able to accomplish plenty of useful work by creating text presentations with clipped-in charts and artwork, tracing some simple shapes, and making use of the extensive symbol libraries.

Balancing the distribution of editing commands over three separate menus and the lack of a tracing tutorial against its familiar, point-and-click pull-down menus, better than average documentation, and an easy-to-use curve tool for tracing, we rate ease of learning very good.

EASE OF USE

Work is usually faster and easier with a mouse, but in some circumstances it's faster to use keyboard commands. All Designer commands can be executed from the keyboard. You can also program the second mouse key to perform any command at a click and can change its meaning at will.

Computer-drawn illustrations are generally created by drawing a number of closed objects, then filling them with a color, patterns, or gray tone. The lines and curves that form the outlines for these objects are called "paths." Designer lets you combine elements into a single path, and a single command lets you designate the path as open or closed. However, since you can't add a point to a path or continue a path, you can't reshape the finished part unless you break it into its original parts. If you're doing a complex drawing in which many of the outlines for the shaded areas overlap, you're in for tedious and frustration.

Illustration programs achieve their effect by overlaying areas of gray or color on one another. All of them, including Designer, will let you move these objects to the front or back of the stack, making it easy to do the drawing first, then add background, shading or, underlying detail later. Detailed drawings may have hundreds of overlapping items, however. There are some convenience features we'd like to see added. You can't simply type in the exact dimensions of a line or curve, which can be a much faster and more accurate way of entering dimensions when you know exactly what they should be. Although you can change the corner radius of a given rounded rectangle, there's no way to preset an accurate radius if you have to repeat several rounded rectangles with the same corner radii.

Yet Designer is amazingly complete for an early effort. Besides, to an extent unmatched by its Macintosh-based competitors, it combines the most frequently

used capabilities of technical drafting (CAD) software with all the basic tools needed for tracing and illustration. It all adds up to a good rating in ease of use, with room for future enhancements.

ERROR HANDLING:

We never lost any data when operating Designer. Furthermore, there are extensive error messages that explain both cause and cure. We did find a few annoyances, however.

Designer lets you "zoom in" to view detail at whatever magnification you like. Unfortunately, some editing commands behave only when the image is viewed at actual size. For instance, the shift/click method of multiple-entity selection didn't always work in a magnified mode. At other times, we couldn't get object snap to toggle off. Annoying, but not tragic. Micrografx is aware of these problems and is working on a fix.

Designer comes with a utility called Convert that imports and exports AutoCAD-format .DXF files (a de facto standard in this field). It works very well, except that if you translate a Designer .PIC file to .DXF, you can't always convert it back to .PIC; attempting to do so may simply hang the computer. The problem may be due to our use of Version 9 AutoCAD, whose .DXF files aren't yet supported by Convert.

Since Designer's error handling is otherwise solid and self-explanatory, we rate it good.

SUPPORT:

Free support is provided for only 60 days. This causes us to downgrade support policies. Extended support is available for \$150; this includes a toll-free number, a free monthly newsletter, and an extra

clip-art library. (You also get an extra library when you register.)

The company guarantees its products to work as advertised, or it will fix or replace the program or refund your money within 90 days. This earns a bonus that balances the limited support period; the net score for support policies is satisfactory.

Although Micrografx has introduced two powerhouse graphics programs in the past year (Graph Plus is the other), its telephone support remains exemplary. The support number goes straight through to a technician, with no delay via the company switchboard. The technicians are universally prompt, courteous, and interested in knowing about your perceptions of their product. If a bug has been recently fixed, you're sent a revision the same day. We badgered the technicians with long lists of complex questions and bug reports; they answered patiently and knowledgeably, tried out our bug reports and called back with answers. We rate technical support excellent.

VALUE:

If you do desktop publishing or have to make illustrated presentations and your computer is MS-DOS based, you'll find Designer uniquely useful and perhaps essential, even if you never use its full power. Its price, \$695, is a bit higher than its Macintosh counterparts, but it is not out of line with other professional-level PC packages. On balance, we consider it a good value.

Ken Milburn is a small-systems consultant and former president of a San Francisco microcomputer systems house. He has installed a number of professional CAD systems.



REPORT CARD

GRAPHICS SOFTWARE

DESIGNER

VERSION 1.2

Criterion	(Weighting)	Score
Performance	(400)	Good
Documentation	(80)	Good
Ease of learning	(40)	Very Good
Ease of use	(120)	Good
Error handling	(80)	Good
Support		
Support policies	(40)	Satisfactory
Technical support	(40)	Excellent
Value	(200)	Good
Final score		6.4

PRODUCT SUMMARY

Company: Micrografx Inc., 1309 Arapaho St., Richardson, TX 75081; (214) 234-1789.

List Price: \$695.

Requires: IBM PC, XT, AT, PS/2, or compatible; hard disk: 512K of RAM (640K recommended); DOS 3.0 or later; graphics adapter with compatible monitor; 286 or 386 system running Microsoft Windows 2.0 recommended. Run-time: Windows included.

Support: Free calls for 60 days. Extended toll-free support available for \$150 per year. Performance warranty.

Pros: Full support for color, Postscript, virtually unlimited choice of display and output devices; can create very large illustrations; very versatile; files can contain both point and draw images suited to both experienced artist and novice; more than adequate in power and performance; superb technical support staff.

Cons: Minor bugs; lacks tracing tutorial and some desirable convenience features found in equivalent Mac software.

Summary: The only MS-DOS based graphics program that makes sense as a tool for creating both technical and illustrative line drawings.

Review Responses

TM/1: DOING THE IMPOSSIBLE

I am a consultant who frequently uses TM/1 to build systems that would be awkward or impossible with other packages. The effectiveness of TM/1 for problems that would, without it, be too expensive for my clients to address is not captured in your review (August 15).

A technical feature that would be difficult for a reviewer to understand is TM/1's ability to allow massive applications to be restructured with a minimum of effort. It is often unwise to spend hundreds of hours designing an application when a prototype can be built and placed in users' hands more cheaply. The overall development time and cost can be minimized for many projects with this approach. In order for this to work, the prototype databases and worksheets must be easily reworked into final form; TM/1 provides the tools to do this.

I enjoy reading your reviews and use InfoWorld constantly as a source of information.

A. LoMont Shultes
Winch Associates
Bridgewater, NJ

TM/1: POWERFUL ANALYSIS

This letter on TM/1, the multidimensional table manager, is written from perspectives developed in 20 years of experience as a corporate manager and developer of financial planning and analysis systems.

One crucial point was underemphasized in your review: the phenomenal benefits available to corporations that

use TM/1 for the purposes for which it was designed — analysis and management for businesses having multiple organizational units, multiple distribution channels, or multiple products. In Fortune 500 companies, these inherently multidimensional tasks typically are performed using DBMS mainframe/micro product families. In medium-size businesses, they are frequently cobbled together using Lotus 1-2-3 or clone spreadsheets — a fragile, unreliable, non-auditable, and perilous approach.

TM/1 permits these analysis and executive reporting functions to be performed on a PC, with simple links to mainframe or other PCs, without the overhead of on-staff programmers or extensive MIS support.

In principle, several shareware products — Lotus Hal (links), the forthcoming Version 3.0 of Lotus 1-2-3 (three dimensions plus links), Framework (links), Excel (links), Surpass (no longer distributed), and VP-Info Plus (five dimensions) — might provide to nonprogrammers some of the functionality of TM/1 for performing multidimensional business analyses on microcomputers. As a practical matter, TM/1 was specifically designed to perform these tasks and is the only product on the market that effectively does so.

Dr. Robert Ludewig
Millington, NJ

TM/1: FAST CONSOLIDATION

My own experience has highlighted a feature of TM/1 that sets it far apart from

its competition. Consider the case of one of my clients who needs to roll up a budget for about 150 departments. There are about 1,000 accounts with values for January through December. This evaluates to a three-dimensional matrix of over 1 million cells. TM/1 handles this with ease, storing all the data in a table of less than 2 megabytes. In fact, TM/1 can consolidate the entire budget in about two minutes (on a 386 with 2 megabytes of extended memory). Another multidimensional spreadsheet took several hours to complete the same task.

Richard F. Creech
Creech, Richman & Associates
Financial Systems Consultants
South Norwalk, CT

OVERLOOKED: THE MENU

I enjoyed *InfoWorld's* July 18 review of menu-making utilities. I noticed, however, one was missing: The Menu, published by ISC. The Menu is brand new to the national market, so it isn't surprising it wasn't mentioned in the review.

The Menu offers an unlimited level of pop-up menus and an unlimited number of selections on each menu. The Menu also has a DOS window with extra features, such as the ability to recall previous command lines (like VMS on the VAX). Other features include automatic screen shutoff, total control over colors, file finding, and security. Because of its capabilities, The Menu is optimal for hard as well as floppy disk systems on PCs, compatibles, and PS/2s.

The Menu, which is priced at \$59.95, can be used for 30 days risk free.

Kraig Danielson
President, ISC
Preston, WA

OVERLOOKED II: MENU EXECUTIVE

Your July 18 article on menu makers is an excellent example of the type of useful articles that *InfoWorld* provides to its readers.

I am involved in marketing and installing turnkey systems consisting of many different software packages that must be accessed through a common user interface. Up until about a year ago, I was using batch files. I then discovered a product called Menu Executive (Xtrasoft Corp., P.O. Box 770, New Ipswich, NH) that provided the perfect solution to my menu requirements. Menu Executive is especially strong in the two most important areas to consider when buying menu systems: customization capabilities and run-time flexibility.

For example, if the applications use a particular color scheme and menu style, the menu system should be able to use the same colors and style. Menu Executive not only permits custom colors and styles, it even permits user-specific menu libraries and home directories, multiple configuration files, and different menu settings within a menu set. Other customizing features available in Menu Executive are optional passwords at the menu or selection level, usage tracking, display date and time, and the current directory path.

Run-time flexibility is the other area I consider of prime importance. DOS batch files permit the use of replaceable parameters that are input by the user as command line arguments at run time. Menu Executive has a similar but more powerful capability: Active Functions. For example, the Path Active Function prompts the user for a path, validates the path entered, then inserts the path into the command line in place of the Active

function. There's even an Active function for menus, permitting a menu to be invoked from within a command line and allowing the user to make a selection from the menu for insertion into the command line.

I have found Menu Executive to be an exceptionally good value with excellent support and recommend that it be evaluated by anyone considering the purchase of a menu system.

Neal J. Dini
Datamax Corp.

OVERATED: MENU PRODUCTS

I used to work for a medical manufacturing firm, and our PCs had menus and selections that consisted strictly of batch files. These worked fine for three years, until one day we had a manager who was

also an engineer, and he decided to bring a menu-creating utility.

Shortly after he installed it on several PCs, one of them — an AT — crashed. It contained a 60-megabyte hard disk. At first we just thought it was normal failure of the machine, but then several more PCs, one of them an AT and the rest XT's, crashed their hard disks. This was just a couple of weeks after the installation of the menu product. All the engineers claimed it was just a coincidence, but the MIS group and I claimed it must be because of the menu product. The PCs that didn't have the menu product experienced no problems, and there were no other changes made to the PCs with the menu product. When we disabled the menu product, they experienced no more problems.

I do not believe the PC world is ready

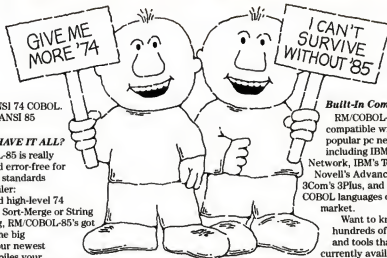
for memory-resident menus. I do not believe they serve enough of a purpose to require their widespread use on PCs. Memory-resident menus don't make much sense when the world can get along fine with batch files. We have enough TSR programs crowding memory as it is. Until these menu programs are perfected, I do not think there should be widespread acceptance of them.

Steve Schafir
Info Systems Specialist
Miami-Dade Community College
Miami

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On the Horizon

By William F. Zachmann

The Drums for SAA Are Muted by the Underwhelming Response to OS/2 EE

Whatever happened to SAA?

You remember, don't you, IBM's Systems Application Architecture, introduced on St. Patrick's Day, March 17, 1987? You may recall that "SAA is an architecture, not a product, that allows IBM to offer the breadth of its product line as a family."

"SAA defines a consistent set of interfaces, conventions, and protocols across the three major hardware environments: System/370, System 3X, and Personal Computer [PS/2]." (Both

quotes are from Page 7 of IBM SC26-4362-0, *System Applications Architecture — Writing Applications: A Design Guide*, September 1987.)

SAA hasn't exactly been at the forefront of the news lately. Sure, there's lots of talk about the IBM PS/2 and competitors, about the Micro Channel Architecture, about OS/2, the OS/2 Presentation Manager, and IBM's OS/2 Extended Edition. There has also been a fair amount of talk recently about IBM's new midrange AS/400 systems.

I was stimulated to think about SAA recently by a rather odd book published by Harcourt Brace Jovanovich, *IBM, The Making of the Common View*, by Michael Killen.

Inspired, it seems, by Tracy Kidder's excellent account of the development of the Eclipse MV8000 at Data General (*The Soul of a New Machine*), Killen set out to do more or less the same for IBM's Systems Application Architecture.

Centered on a February 18, 1987, meeting of what was then IBM's Manage-

ment Committee, Killen's book is a heroic and somewhat quixotic effort to present the development of SAA as a dramatic and suspenseful event of great consequence for IBM as well as for the industry.

Tracy Kidder isn't likely to suffer any diminishment in comparison to Killen's prose style. I mean, how much of a threat is Kidder likely to feel from someone who writes things like:

"Earl Wheeler must have breathed a sigh of relief — one down, two to go. He pretty much had his common user interface. Hanrahan had done it; he had succeeded in obtaining commitments to conform to SAA requirements from the product managers of the Presentation Manager, the Data Manager, the Communication Manager, and the manager of the overall OS/2 development. And it looked as if the products would get out well within two years from the announcement date."

Despite its somewhat less than scintillating style, however, I must confess to having found the book quite interesting to read.

Killen appears to have had some pretty good sources at IBM and manages to provide an account of how things work there that is downright fascinating to a hard-core IBM watcher like myself. Even making allowances for a certain amount of imaginative filler, Killen's book appears to contain a substantial core of factual material.

The most important fact in Killen's book is that the effort it represents to create a common user interface, common programming interface, common communications interface, and common applications for IBM's 3090 mainframe, AS/400, and PS/2 (actually OS/2) environments was taken very seriously and approved by IBM's most senior executives.

Equally important, however, is that Killen's book inadvertently reveals the degree to which IBM is an enormous bureaucracy in which even the best-intentioned efforts of remarkably capable people are readily absorbed by the inertial mass of the enterprise. That is all the more apparent given the benefit of hindsight a year and a half after the events described in the book.

For it is evident that widespread acceptance of IBM's OS/2 Extended Edition is a necessary condition for the success of IBM's overall SAA strategy. If OS/2 EE does not become the standard desktop operating system for corporate America, the enormous resources IBM has devoted to SAA will provide no return.

Given that OS/2 Extended Edition has so far generated even less enthusiasm among corporate users than Topview did, it is hardly surprising that the drums beating for SAA out of Armonk have been remarkably muted of late. Until (unless?) IBM is able to overcome the underwhelming response OS/2 EE has received so far, we aren't likely to hear a lot more about SAA in the news any time soon.

William F. Zachmann is vice president of corporate research for International Data Corp., a market research firm owned by the same parent company as InfoWorld. The views expressed are his own.

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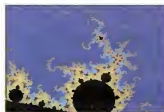


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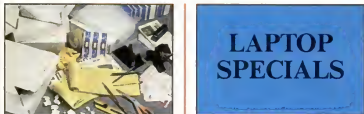
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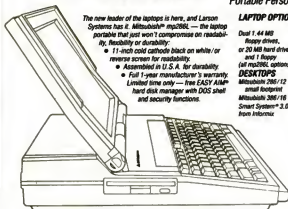
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- 45
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ALL THESE FEATURES AND MORE ARE STANDARD

- 64 KB ZERO WAIT STATIC RAM CACHING • 1.2 AND 1.44 FLOPPY DRIVES • VERTICAL CASE
• 65 MB FAST HARD DRIVE • RLL ENCODING • 1:1 INTERLEAVING
• 1000 LINE 14" MONITOR • HARD AND FLOPPY DISK CACHING • AUTO OPTIMIZE
• LANDMARK 1.09 RATING: 23.2 • NORTON V4 SI: 18.7



\$3658⁵⁰
complete system

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Yes, "386 Northgate Power" includes every feature you see here. No phony "bare bones" pricing. No hidden costs. Extras galore you won't get from other vendors. And a price hundreds lower than you'll pay elsewhere for the same features—if they're even offered!
TWO FLOPPY DRIVES—a 5¼" 1.2MB AND a 1.44 MB 3½" for total disk

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SYSTEM IS FULLY CONFIGURED, HARD DRIVES ARE FORMATTED, SOFTWARE LOADED, READY TO USE... "386 Northgate Power" is the Ideal System for High Speed CAD/CAM Workstations; Desktop Publishing; Ultra High Speed LAN File Servers; Intermediate Size (1-16 terminals) time sharing systems using XENIX/UNIX.

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386 Northgate Power System Price Complete **\$3658⁵⁰**

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20MHz INTEL DOUBLE SIGMA 80386 PROCESSOR	\$949
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MULTISYNCHRONOUS MONITOR W640 X 480 AUTOSELECT CARD	\$695
MULTISYNCHRONOUS MONITOR W800 X 600 AUTOSELECT CARD	\$795
65 MEGABYTE HARD DRIVE FOR FAST BACKUP (INTERNAL)	\$349
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- GENUINE DOUBLE SIGMA INTEL 386 PROCESSOR (Beware! Others may supply 16 MHz single Sigma Chips)
- 1 MEGABYTE OF 32-BIT DYNAMIC RAM ON BOARD. OPTIONAL 4MB ON MOTHERBOARD, 16 MB USING LOW COST RAM
- 6 AT-Compatible 16-bit slots; 2 XT-Compatible 8-bit slots
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- 80287 or 80387 Co-Processor Capability
- ELEGANT, HEAVY-DUTY VERTICAL CASE (Not a PC Stood on End)
- TWO FLOPPIES—1.2MB 5.25 AND 1.44MB 3.5 (Others sell only a 1.2 MB and charge up to \$200 for the 1.44MB Drive)
- 65 MB HARD DRIVE WITH DISK CACHING (For virtually zero-wait read/write access)
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 - STD Herc. Graphics Card Supplied.
 - Our Own Insta-Cache program—up to 1.6MB of instant-access disk caching. Makes disk read/write access near zero-wait!
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PC MAGAZINE REPORTS... "PC Labs tested drive

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Installed on your hard drive is Northgate's exclusive Insta-Cache™ Hard Disk Caching program. Once a file is read it's in cache. Retrieving it again is 0-wait. No hard drive access is needed. This is an \$80.00 value, yours at no extra cost. AND...WE ALSO GIVE YOU THE BEST DISK OPTIMIZER PROGRAM EVER—VOPT™ BY GOLDEN BOW SYSTEMS. CLEANS UP FRAGMENTED SECTORS AUTOMATICALLY EVERY TIME YOU START YOUR SYSTEM. A \$50.00 VALUE, AGAIN YOURS FREE WITH THE NORTHGATE 286.

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400% Faster Performing
WORLD CLASS QUALITY
Features Unmatched Anywhere

The Bottom Line

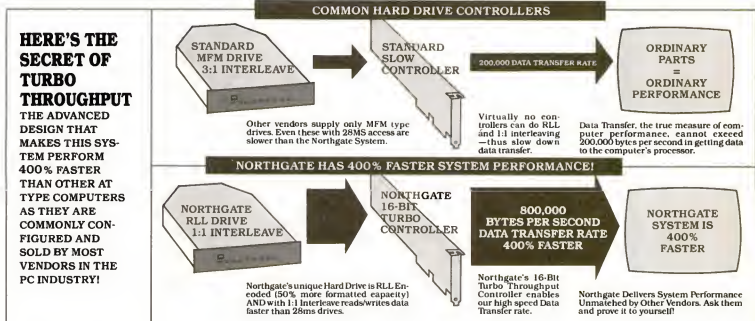
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complete
as shown

throughput on all the (21) machines in this review, (Feb. 16, 1988)
WAS THE FASTEST...

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Computing Power

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Northgate pioneered RLL Hard Drive and 1:1 Interleaving in its 286 systems. To our knowledge, no competitor even offers these vital performance features. Call them. We did. Only Northgate gives you this

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ALL THIS PLUS...The Computer Industry's Most Meaningful Service and Warranty Policy...

30-Day Compatibility Warranty:

Northgate guarantees its systems will operate any standard, commercially available DOS programs written for use on IBM Compatible Computers. If, on consultation with Northgate, a program cannot be made to operate satisfactorily, owner may return the system, complete and unaltered for a prompt and full refund including all freight costs.

One-Year Overnight AT NORTHGATE

EXPENSE Parts Replacement Warranty:

Northgate Computer Systems warrants that all systems sold by Northgate will be free of defects in workmanship and materials for one year from date of shipment.

- In the event of failure of a part that disables the system Northgate will ship the same day if notified by 12 Noon Central Time, a new replacement part. Customer must phone Northgate Customer Service for diagnosis of the failure.

- Shipment of the replacement part will be by overnight-express service—AT NORTHGATE'S EXPENSE—for next day delivery depending on the carrier's ability to provide such service in owner's geographic area.

- Owner must return any replaced part, complete and unaltered, and pay return shipping costs, to be received at Northgate within two weeks after receiving the replacement part.

- Northgate's Customer Service department will provide full

instructions on making the repair or replacement and will consult with customer on the phone to assure repair is properly completed and the system is again operating.

- In the case of a complete system returned for repair under warranty, customer pays freight to Northgate and Northgate pays return freight by whatever service the system is sent to Northgate.

In the event of a part replaced under warranty, the new part carries a NEW ONE-YEAR GUARANTEE FROM SHIP DATE! NOTE: Many computer vendors extend only the parts manufacturer's warranty which may be as little as 30 days. All products sold by NORTHGATE are fully guaranteed by Northgate for one year from date of shipment.



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Leprecards feature components utilizing the latest technology. Low power drives mean less strain on your systems, lower operating temperatures, and longer component life. You get a 1 year warranty, unlimited technical support, and our illustrated installation and user's guide. Models available for IBM PC/XT and compatibles, as well as TANDY 1000/A/SX/TL/SL.

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21MB 48ms	32MB 48ms	40MB 70ms*	40MB 28ms*	65MB 18ms*
\$299	\$339	\$449	\$549	\$649

* Average access speed per partition

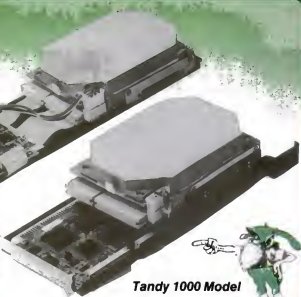
Tandy 1000/A/SX/TL/SL Leprecards add \$20

3.5" Floppy Kits

Internal kits for PC/XT/AT computers include 5 1/4" mounting brackets, black & gray face plates, and AT rails. 1.44MB for PC/XT includes high speed Western Digital controller.

FREE TAKE TWO floppy backup software.

720 Kit	1.44MB for AT	1.44MB for PC/XT
\$109	\$139	\$199



Tandy 1000 Model

PC/XT Disk Kits

- Pretested & formatted
- Western Digital short slot controller
- 30 page installation guide & reference manual
- Cables, mounting screws, full & half-height face plates
- 1 year Warranty, 30 Day Money Back Guarantee
- Optional: 150 watt UL/FCC approved power supply for IBM PC's \$69

20MB KIT	\$279
• Seagate ST2251 - 21.4MB/65ms. Half-Height/14.5 watts	
30MB KIT	\$299
• Seagate ST238 - 32.7MB/65ms. Half-Height/14.5 watts	
40MB KIT	\$459
• Seagate ST2251 42.8MB - Half-Height - 11 watt	
• pre formatted into a pair of 21MB/28ms partitions.	
65MB KIT	\$549
• Seagate ST277R 65.5MB - Half-Height - 11 watts	
• pre formatted into a pair of 32MB/28ms partitions.	

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Tandy 1000 kits add \$20

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INFO WORLD October 5, 1987

- Printer utility software
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- 1 year Warranty
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- 9 resident & 5 downloadable soft fonts standard
- Options: All HP style font cartridges

512K	1.5MB
\$1495	\$1595



Toner Cartridge \$29

AT Hard Disk Kits

- Includes IBM AT rails, and cables.
- SpeedStor or Ontrack large drive software.
- Formatted, Partitioned & Tested.

SIZE	MODEL	SPEED	CAPACITY	PRICE
HH	Seagate ST251	40ms	42MB	\$359
HH	Seagate ST251-1	30ms	42MB	\$449
HH	Toshiba Drive MK134	25ms	44MB	\$499
FH	Seagate ST4096	28ms	80MB	\$599
FH	Maxtor 1140	27ms	117MB	\$1699
FH	Maxtor 2190	30ms	150MB	\$1999

LepreFAX Modems

- Easy to use POP-up Menus
- Sends ASCII or word processing files
- Internal 4800bps, \$289 9600bps \$559
- Prints on standard dot-matrix or laser printers
- Sends/Receives from any Group 3 fax machine
- Automated sending during low phone rate periods
- Portable external plugs into PC/XT/AT serial port, \$359

External
\$359

Internal
\$289



4" Hand Scanner with HALO DPE software \$269

2400 Modems

with MNP

External	Internal
\$239	\$229

Hayes Compatible, 300/1200/2400
MNP Level 4 error correction
FREE MIRROR II Software, a \$69 value
Internal model \$229, fits in a short slot

2400 without MNP \$159 Ext \$109 Int



Orchid

Designer VGA 512K	\$299
Orchid VGA 256K	\$249
Tiny Turbo 286	\$289
Ramquest II 1MB	\$799



286¹⁰ Computer

\$895

80286 processor running at 6/10 Mhz with 0 wait states provides a Norton SI rating of 11.5. 8 slots - Room for 1 full and 3 half-height drives-220 watt power supply - clock/calendar - Choice of 1.2 or 1.44MB floppy drive-Genuine Western Digital combination Hard disk/floppy controller-American made Maxiwell 54 or 101 key keyboard - 512K RAM standard expandable to 1MB Award BIOS- 1 year warranty - 30 day money back guarantee.

Complete systems with serial & printer ports:

Model/Graphics Card & Monitor	\$1095	Orchid VGA Card & Multiscan Monitor	\$1595
VGA Card & Mono Monitor	\$1295	Orchid Designer VGA Card &	
EGA Card & EGA Monitor	\$1495	NEC Multiscan II Monitor	\$1895



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- 100% IBM[®] AT[®] Compatible
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- Built-in Floppy and Hard Disk Controller
- Built-in MDA-EGA
- Two Serial Ports
- One Parallel Port
- Mouse Port
- 80287 Coprocessor Support

- Four Expansion Slots (three 16-bit AT bus and one 8-bit PC[™] bus)
- Phoenix[®] BIOS
- Surface Mount Board
- 1.2MB Floppy
- 200 WATT Power Supply
- FCC Class B Certified

	Hard Drive Only	CGA System	EGA System
20MB	\$1,609	\$1,809	\$1,889
40MB	\$1,709	\$1,879	\$1,979
80MB	\$1,909	\$2,109	\$2,184

*All systems include high quality drives from Seagate

Packard Bell's VX88 \$729.00

- 5.5-8 MHz
- 512K
- 4 slots
- CGA board
- Parallel/Serial Port
- Many More Features
- Monitor Not included



Monitor/Hard Drive Upgrades*

	20MB	40MB
Mono System	\$999	\$1,139
CGA System	\$1,129	\$1,269
EGA System	\$1,399	\$1,529
VGA System	\$1,499	\$1,639

*All hard drives from

Seagate

Murata M1200 \$749.00

- G2 & 3 • Polling
- Features • Built-in
- Fax Phone • Built-in
- Copier • Portable Desk-top



Packard Bell's PB286-10 \$1,129.00

- 6-10 MHz
- 1 Wait State
- 1.2MB Floppy
- Parallel/Serial Port
- Expandable to 15MB
- DOS 3.3/GW Basic
- Keyboard • 640K
- Western Digital Hard Drive/Floppy Control Card
- Many More Features
- Monitor Not Included



Monitor/Hard Drive Upgrades*

	20MB	40MB
Mono System	\$1,499	\$1,619
CGA System	\$1,649	\$1,769
EGA System	\$1,849	\$1,969
VGA System	\$1,949	\$2,069

*All hard drives from Seagate

Western Digital Hard Drives

- 20MB Kit **\$239.00**
- 40MB Kit **\$329.00**

Graphics Boards

Paradise EGA480

- 640 x 480 Auto Switch

\$199.00

Paradise VGA Plus

- 800 x 600

\$299.00

Fujitsu

- 360K Floppy Drive
- 720K Floppy Drive
- 1.2M Floppy Drive

\$75.00

\$95.00

\$99.00

Intel Math Co-Processors

• 80287	6-8 MHz	\$159.00
• 80287-8	8-10 MHz	\$242.00
• 80287-10	10 MHz	\$289.00
• 80387	16 MHz	\$469.00
• 80387-20	20 MHz	\$689.00

Rodime Hard Drive Kit

- R05090 • 85MB AT

\$669.00

Includes rails, software, low level formatted, standard kits.

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2. If preapproved, we will ship COD with a minimum order of \$50.00.
3. FREE - One year of free technical phone support with each purchase.
4. All products come with a 30-day, money-back guarantee.

5. Company and institutional terms are available upon credit approval.

Return Policies:

1. Call for RMA #.
2. All returns must be shipped prepaid and insured.
3. Items must be returned in original condition, with complete packing material and all documentation.
4. There will be a 15% restocking fee for items returned after 30 days.

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Everything You Need To Begin
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AVAILABLE
WITH VGA
VIDEO!



Professional Starter Kit \$1515

Computer—286/10MHz system with 80286 processor (with switch-selectable 6MHz or 10MHz processing speed), 512KB RAM, (expandable to 1MB), floppy drive, your choice of keyboard, dual floppyhard drive controller, clock/calendar w/battery backup.

Monitor—High resolution (750 pixels x 350 lines) amber monochrome monitor with 12" display screen, monographics card with parallel port.

20MB Hard Drive—20MB hard drive, fully installed. 40MB and 60MB options available.

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Software—Professional Zen Software, a totally integrated software package: ZenWord®, ZenCalc®, ZenLink®, MS-DOS® operating system, GW BASIC® programming language, and PC FullBak backup utilities also are included.

Accessories—200 sheets continuous form paper, printer cable, and 10 blank diskettes.

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AT Hard Drives



- One-Year Limited Warranty
- Whitney Technology Flexures and Sliders
- Linear Voice Coil
- Fail-Safe Automatic Actuator Lock
- Closed Loop Servo System
- PC FullBak Backup Software

20MB (Seagate, 65ms)	\$249
40MB (Seagate, 28ms)	\$439
40MB (MiniScribe, 61ms)	\$349
43MB (MiniScribe, 25ms)	\$459
71MB (MiniScribe, 71ms)	\$649
110MB (MiniScribe, 28ms)	\$895

360KB Diskette Drives



- For AT's Half-height diskette drive for the AT, with a gray faceplate \$109
- For PC's Half-height diskette drive for the PC, with a black faceplate \$99

PC/XT® Hard Drives

- One-Year Limited Warranty
- Western Digital Controller
- Mounting Hardware
- Cables
- PC FullBak Backup Software
- Complete Illustrated Installation Manual

20MB (MiniScribe, 65ms)	\$279
20MB (Seagate, 65ms)	\$289
30MB (Seagate, 65ms)	\$310
40MB (MiniScribe, 61ms)	\$379
60MB (MiniScribe, 61ms) RLL	\$419

FlashCards™

PC Magazine
Editor's Choice
Feb. 16, 1987

- Western Digital controller
- One-year limited warranty
- Shock mounted
- Boots from FlashCard
- 3 1/4" hard disk

FlashCard-20 (65ms)	\$319
FlashCard-30 (65ms)	\$339
FlashCard-49 (28ms)	\$539

Keyboards



- 101-Key enhanced \$69
- 5151 \$69
- 5060-AT style \$69

Standard™ -286/10



Editor's
Choice
Feb. 18, 1988



- 6MHz/10MHz Speed
- 80286 Processor
- 200-Watt Power Supply
- Clock/Calendar w/Battery Backup
- 1.2MB Floppy Drive
- 512KB RAM
- Dual Floppy/Hard Disk Controller
- Your Choice of 101-Key 5151, or 5060 Keyboard

\$1045

Standard-286/12
12MHz processing speed with zero wait state \$1245

Standard Turbo/10

- Keyboard-selectable 4.77MHz-10MHz processing speed
- 640KB RAM
- Keyboard lock
- System reset button
- Your choice of keyboard
- Eight expansion slots
- 8086 processor
- One 360KB half-height floppy with controller



\$595

Monitor not included

Monographics Video



Monographics Card
Test mode 10 col. x 25 rows, graphics mode 720 x 348 \$53

EGA Video



EGA Card
640 x 350, 256KB display RAM \$159



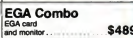
Samsung 12" flat screen with RGB & serial base \$95



EGA Monitor 14" tube, high resolution \$349



Mono Combo Monographics card and monitor \$139



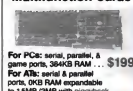
EGA Combo EGA card and monitor \$489

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PC/XT: Serial port, parallel port, clock/calendar with battery backup, and game port for your PC \$65

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For PCs: serial, parallel, & game ports, 384KB RAM \$199

For ATs: serial & parallel ports, 6KB RAM expandable to 1.5MB (2MB with piggyback option) \$110

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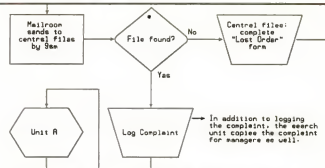
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286

Continued From Page 1

reasons, but because it was IBM," said Stephen Walrath, manager of technology planning at Pepsico Inc. in Purchase, New York. Walrath said he was never interested in buying Model 30s, so an upgraded 286-based Model 30 would not alter his purchasing plans. "We will continue to buy Model 50s and above," he said.

Still, the new Model 30s will win some converts among PC managers who abandoned IBM for Compaq and other clone makers when IBM discontinued its "classic" PC architecture.

"I think it's a good move, and I applaud them for it," said Ed Sund, senior systems engineer at Weyerhaeuser Corp. in Federal Way, Washington, who supports more than 6,500 PCs.

"It sounds like a very competitive machine," said James Page, information systems support services manager at Alpac Corp., in Seattle, who said his firm would consider buying IBM.

With the low-end version of the new machines priced less than \$2,000 — making the street price about \$1,300 — IBM's new machines will compete in price with 286 machines from Epson, AST, NEC, and Compaq, said JoAnne Stahel, vice president of research at Storebrand Inc., in Dallas.

IBM will announce tomorrow two new versions of its

Model 30 PS/2, according to sources close to IBM. Both machines will be based on Intel's 10-MHz 286 chip with one wait state. The machines will also have three slots and 1 megabyte of RAM expandable to 4 megabytes.

One of the machines, the Model 30-E01, will have one 3½-inch 1.4-megabyte floppy drive; the other, the Model 30-E21, will have both a floppy and a 20-megabyte hard drive. (See "IBM to Roll Out Pair of Model 30s, RPG II Platform, Updated Proprietary," September 5.)

Other PC managers, who abandoned IBM when the PS/2s were announced, said they do not intend to go back to Big Blue.

"They tried to push PS/2s down our throats," said John Marcini, a computer specialist with Visions Corp., in New Market, New Hampshire. "But if you don't need to network or hook up to a mainframe, you don't need MCA."

For companies that currently have System/36 and System/38 machines installed, the RPG platform will be a big plus. "I think it's a great idea for [in-house application developers]," said Weyerhaeuser's Sund. "Why develop on a System/3X if you can do it on your desk [using a PS/2]? Why not get [your application] up and running and tested, and then put it on the System/3X, which might be removed."

However, Sund said that using a PS/2 as a System/3X user platform would be frustratingly

slow. "It may [only] be appropriate for a small shop with a few programmers," he said.

Still, other PC professionals said that the System/3X's time has come and gone, and it no longer fits into their long-term systems strategy.

"RPG is not really relevant to what we're doing," said Alpac's Page, who acquired System/36 machines in an acquisition he is phasing out. "They just don't fit in with where we are going," he said.

Next week, IBM will also unveil its "RPG II Applications Platform," which will allow PS/2s running OS/2 to access the 4,000-application library of the System/36 family and to perform as a multiuser system, said sources close to the company.

Built around a software package called Baby 36 and designed by California Software Products Inc., it will let users of PS/2 Models 50, 60, 70, and 80 run applications written in the RPG programming language.

With the addition of IBM's Multipoint card for the MCA, the platform will also support up to eight 3151-compatible computer terminals.

An OS/2 version of Baby/36 will be announced this week, the firm said. The company will also announce the RPG II Automated Conversion System, which will let developers and System 36 users modify RPG II applications so they will run properly on Baby 36 under DOS or OS/2 environments.

— Mark Brownstein also contributed to this story.

Word 4

Continued From Page 1

a specific place on the page measured in absolute inches. In part because of this feature, it's now much easier to wrap text around graphics, although Word does not match Full Write's capability to wrap around irregularly shaped graphics.

Perhaps most unusual is Word's four options for viewing text. The former method is now referred to as Galley view, and it simply shows your document as you typed it. A new Page View lets you edit your document with all the headers, footers, graphics, columns, etc., as they will appear when printed — this mode is fully WYSIWYG, though it can be a bit slower with complex documents.

Still offered is a reduced facing pages view of your document, now known as Print Preview. Finally, there is an enhanced outline view that lets you use the mouse to click on an icon to select a paragraph and all subheadings and text.

As in Word 3, you can choose between full menus and short menus, which give you only the more basic commands. More importantly, this version offers expanded customization of the menu. You can now rearrange which functions appear under which menus and change or add the keyboard equivalents for any function. Microsoft has al-

ready changed some of the order of the commands, grouping functions such as spelling, outlining, hyphenation, table of contents creation, and indexing under a new utilities menu rather than under the document menu. The new arrangement makes sense to me, but if I didn't like it, I could put it back the old way. You can also put specific command choices on the menu, such as a menu item for switching to double-spaced text. These choices make it easy to get the program to work the way you want.

Many preferences can be set as well. If you like seeing your page breaks automatically, Word 4 now has this feature. However, it slows down the program, particularly on long documents. Another option lets you keep the entire program in memory. Additionally, like Full Write, Word 4 now offers a Smart Quotes feature that automatically puts in opening or closing quotes.

Several of the new features in Word 4 aren't in the program itself, but in supplementary programs that come with Word. Silicon Beach's Superpaint 1.1 is a very nice monochrome paint package; Genesis Micro's Auto Mac III is a macro recording package that installs as an INIT; and Microlytic's Word Finder is a rather nice thesaurus that comes as a desk accessory.

This approach helps Word compete with Full Write and Word Perfect, but it has pros and cons. One bonus is that these are stand-alone programs you can use even when you're not running Word. However, sometimes — particularly with graphics — it's more convenient to have these features within the word processor itself.

On the other hand, Word 4 does have Quick Switch, a nice way of connecting the word processing program with the graphics program and with other programs such as spreadsheets. With Quick Switch, if you insert a graphic or table in your document, you can select the object, then return to the graphics program or the spreadsheet to edit it. This may be a preferable way to work with objects within a word processing document — after all, you'd expect more paint tools in a graphics program and more spreadsheet tools in a spreadsheet.

Although Word 4 does not have quite every feature its competitors have, its customization features and unusual extras should help keep the product on top.

Word 4 requires a Macintosh with at least 512K of RAM. It will have a list price of \$395 and should be available next month from Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073; (206) 882-8080.

First Look examines new personal computer products before they have been through a formal review.

AT Bus

Continued From Page 1

with the need for DIP switches. The new bus will be centered around Intel's 82350 chip set, according to sources.

What gives this specification such a high degree of credibility is nearly every company that helped establish the PC AT bus as a standard — except IBM — is backing it, notably Compaq, Intel, Microsoft, and Phoenix Technologies Ltd. The specification's announcement comes at a time when some users' faith in IBM's MCA is being tested.

Perhaps not coincidentally, Compaq and its allies have chosen to make their announcement on the same day IBM is expected to announce an AT-bus-based machine here. In recent weeks some industry observers have speculated that the new PS/2 Model 30s are an admission from IBM that it moved too quickly from the AT to the MCA bus.

Feelings on EISA among users, analysts, and vendors last week ranged from cautiously optimistic to enthusiastic.

"I don't know anything about [EISA], but they [Compaq] better be able to demonstrate some real value in it," said Tom Enrico, president of the

Intel to Create Chip Set for EISA Bus Standard

A key part of the EISA bus effort is expected to remain in the background at this week's EISA consortium announcement.

The missing component is the Intel 82350 family, a three-chip set under development that will implement the EISA alternate bus standard, according to *InfoWorld* sources.

Sources at companies participating in the consortium said Intel's role is to provide the necessary message-passing protocol chips that

move signals between the chips and the bus.

Several sources said that other chip vendors, such as Chips and Technologies, are also working on a similar chip set, but the company would not comment. "All this [publicity] has occurred too quickly," said Ron Yara of Chips and Technologies. "We simply cannot comment, except to say that it appears to be a natural evolution of the AT-compatible architecture."

— Tom Moran and Martin Marshall

Capital PC User Group. "If it does have demonstrable merits, it may give MCA a real run for its money," he added.

"This is an interesting twist, but not unexpected," said Dave Korus, an analyst with Kidder Peabody Inc., in New York, who noted that Compaq has hinted at such a product for some time. "It doesn't represent a major achievement from a technical standpoint. It won't be new, but it will be faster," he said.

Some users were more enthusiastic. "I'm absolutely in a state of euphoria. We've needed a 32-bit bus that's an open architecture with no restrictions. I think it's going to be healthy for everyone," said Ed Sund, a senior systems engineer at Weyerhaeuser Corp., in Federal Way, Washington.

Other observers were concerned the new bus might not be enough. According to Carl Warren, principal engineer at Warren Group Labs, in Torrance, California, "The EISA is going to drag along address conflict problems, including the notion of the byte ordering, and it will be interesting to see how they address this issue. I think the EISA implementation will top out at about 35 MHz or 40 MHz, and that is already unacceptable for emerging processors such as the 33-MHz 80386 and the 486, which will do an instruction execution in slightly under two clock cycles when the clock will most likely be running in excess of 50 MHz."

"Since EISA is essentially an extended AT bus, where you add 16 more lines, there are problems with address conflicts,

bus noise, and line loading," Warren said. "Moreover, there are issues of byte ordering, message passing, and arbitration. It would seem that Compaq has designed a bus that is passive in orientation and active in operation."

No EISA-based systems will be deliverable for at least 12 months, according to sources at the companies.

An important building block for the specification, according to several of the participating companies, is the Personal Computer Extended Technology specification fostered by Phoenix Technologies and supported by over 60 companies two years ago. The PCET spec was submitted to an IEEE standards committee but lost momentum when IBM introduced the MCA shortly thereafter.



Apple Sailing on a Midnight Run at Macworld

Rolling in the easy swells off San Diego, we waited with a hundred other boats for the America's Cup racers to pass. Just after lunch, we were sitting in the cockpit of the *Jazz Baby* when Merle spotted the sailboats headed our way. With a rush of hulls through water and a groan of tortured rigging, they swept by us, giant *New Zealand* in the lead, with the catamaran *Stars & Stripes* just behind, one hull raised out of the water. Winches rattled aboard both vessels, crewmen leaned precariously from each raised rail. At once spectacular and bizarre, it was like Moby Dick being chased by a pair of ice skates.

Cruising at 20 knots, they were gone in a minute. We watched them disappear, then Merle headed below.

SAVE YOUR MONEY. "It'll be four hours before they pass us on the way back," Merle said. "What would you like to do?" he asked, flopping down in a chair and turning on ESPN to watch the rest of the race. Merle, a sometime programmer, owns the *Jazz Baby*, a slender 60-footer with four Allison V-1710 engines. Merle cruises *Baby* at 60 knots, mainly to Mexico, and mainly at night. I don't ask questions.

"You know what's a rip-off?" asked

Merle, already bored with the race. "The technical reference manual for DOS 4.0. The damn thing costs \$125, and it's literally a reprint of the DOS 3.3 manual. There's only one function that's different between the two versions — 6C, extended open create. I'll copy the page for you if you like."

LET MIKEY DO IT. In addition to its 2,400 horsepower, the *Jazz Baby* has every electronic device known to man, many of them monitored by Merle's on-board 386. "Junk," sneered Merle, glowering at the machine. "It has a Rev. 192 Intel motherboard that burns hard disks. Intel

knows about the problem, but they're not doing anything about it. I may replace it with Dell's new 386SX that's coming on October 4."

FADING SAX APPEAL. "How do you know all the stuff?" I asked Merle. "Industry secrets are supposed to be my thing, not yours."

"Scanners," Merle replied. "I built up a zillion-channel scanning receiver for those guys looking for intelligent life on other planets, and the darned thing worked so well I built one for myself. The input's buffered, then goes through a neural net checking for patterns I set. I've got radar, microwave, cellular phones, you name it. Pretty useful tool in my business."

Carefully avoiding the topic of Merle's business, I started taking notes when he told me about the trouble between Philippe Kahn and Ben Rosen at Borland. Rosen is said to want Borland to run more orderly — and profitably. The two's swords are crossing on a variety of issues — including the recent layoffs — and some expect an announcement from Borland soon in which Rosen will gain a formal role in the company and Philippe will spend more time on the road representing the firm.

MACINTOSH SE-X7 Asking Merle to scan his system for Apple yields even more than I hoped for. Most of it concerned January Macworld announcements, which look to be two 68030 machines and a laptop.

First, there's the three-slot version of the IIX, a cute number with the same footprint as a color monitor. The box has removable feet that go either on the bottom or side. Then there's Jean-Louis Gasse's favorite, an 030 SE that has had a variety of code names, including Puff, Fafnir, and now Midnight Run. This is the fastest of Apple's 030 offerings — about 15 percent faster — because it doesn't have to run video through the Nubus, which slows down the IIXs.

Finally, the 68020 laptop has cured its display problems but still suffers software compatibility troubles, based mainly on its "sleep mode," which keeps memory active, causing problems for some applications after they've been powered-up for a few months. Look for units with 20-meg hard disks, battery-backed removable slim cards, and floppy, but there's only room for two storage devices, not all three. Sadly, this baby will require a strong lap; with its large internal battery, call it a *lugable*.

NO GUTS, NO GLORY. "They're all wimps!" said Merle, heading back to the cockpit. "Only Steve Jobs has any guts. He's sending out 4000 invitations for the October 12 intro of his machine, and I wouldn't be surprised if he canceled that date too. Takes a lot of guts to make 4,000 people sit on their hands. A lot of guts."

"I'm bored with this," bellowed Merle, slamming the twin throttles forward. "Let's catch those sailor boys!" Surging onto the step, *Jazz Baby* was passing through 60 knots in seconds. Struggling to hang on, I couldn't see. Couldn't hear, and couldn't stop grinning. Conner would never even see us coming.

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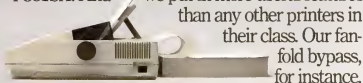
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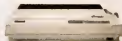
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